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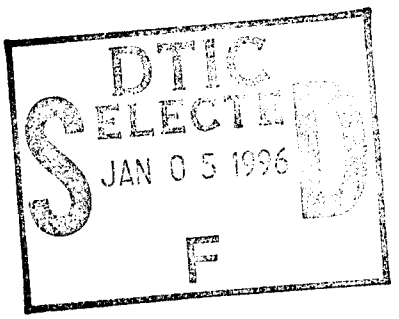

MULTIMEDIA AND AUDIENCE: IMPLICATIONS FOR EXECUTIVE SUMMARIES

THESIS

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AFIT/GIR/LAR/95D-3

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THESIS

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Donna M. Grudziecki

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Abstract

In an effort to put technical reports into a multimedia format, this thesis explored audience analysis and multimedia issues related to executive summaries. While multimedia has been shown to be effective at conveying complex information in certain environments, little research has been done to apply this technology to technical reporting. This thesis concentrates on the executive summary audience because the executive summary is the most read and most important section of a report. To analyze the audience, I conducted telephone interviews with report readers using an interview form I developed based on Mathes and Stevenson's guidelines for conducting an audience analysis. I included a section to assess the readers' perceptions of the usefulness of four forms of multimedia--sound, video, hypertext, and CD-ROM--for effectively retrieving information from an executive summary. The data results show on average a well educated, middle aged group of readers with considerable experience in their jobs. In the multimedia assessment, hypertext was rated the most useful at retrieving information from an executive summary, with video, CD-ROM, and sound following in that order. For report writers, then, the data helps to narrow down the type of information to include and what multimedia format to consider when preparing an executive summary.

MULTIMEDIA AND AUDIENCE:

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I. Introduction

General Issue

In this day of rapidly changing information technology, multimedia is often regarded as the "latest and greatest" way to transition information. Of concern to writers of technical reports, however, should be the readers. A technical report writer must be aware that readers may need--and want--the best, fastest, and most easily understandable way to retrieve information. The report writer would then benefit from knowing and employing the new methods of transitioning information if they better suit the readers' needs than traditional methods.

To distinguish multimedia from any other computer-generated document or program, the writer must "incorporate sound (recorded music and voice) and dynamic graphics (video and/or animation), as well as static text and graphics" (Owens, 1994:466). Multimedia often also allows interaction between the reader and the document or presentation.

The engineers of the Pilot/Vehicle Interface Technology Section (WL/FIGP-1) of USAF Wright Laboratory currently use traditional methods, namely paper text and graphics such as pictures, charts, and tables, to report technical information. The section conducts research on pilot/vehicle interfaces, a portion of cockpit design that involves different types of engineering expertise as well as human factors issues. The section chief recognizes the potential of multimedia for improving the reporting of the section's research results and wants to apply this new technology in an effective, well-thought-out way.

It would be easy enough to run out and buy a multimedia presentation software package, slap a technical report onto it, and pass it out to WL/FIGP-1's users. But such a haphazard approach ignores some basic questions of technical reporting that should be considered in this case. First, do current ways of transitioning information address the needs of the section's readers? And second, what are the needs of such readers?

Specific Problem

The WL/FIGP-1 audience needs the information in the section's technical reports, and they need to retrieve the information by the most effective means possible. Currently the section only produces its reports in the form of traditional linear written products, which have limited capabilities to convey information. Multimedia, on the other hand, has been shown to be more effective at conveying information than traditional texts in certain

environments; however, up to this point, little exploration of the advantages of using multimedia for technical reporting has been done.

Focus

The executive summary of a technical report is the focus of this thesis. Why? Primarily because the average technical report can be broken down into three areas: executive summary, body, and appendices. The last two portions are generally quite technical and their formats are driven by the type of research being reported. The executive summary, however, is an overview that provides "bottom-line information for readers who don't need details," focuses on an organizational or research context versus a purely technical context, and "present[s] conclusions and recommendations in organizational terms" (Mathes and Stevenson, 1991:90).

I narrowed my research to executive summaries because they are the most important and most read sections of technical reports. For the busy manager or executive, the executive summary can serve as a substitute for the entire report. For other readers, the executive summary serves as a roadmap of information found in other parts of the report. Additionally, the executive summary can also simply tell who *should* read the report. Thus the executive summary may go to any number of people, each with different levels of technical expertise and different reasons for reading the report. The executive summary audience, then--this wide variety of readers--is the focus of this thesis.

Research Questions

To address the specific problem I presented above, I seek answers to the following questions:

1. What information about executive summary readers' characteristics will aid writers in preparing technical reports?
2. What do the readers need from WL/FIGP-1 reports?
3. Which forms of multimedia are best suited for conveying the type of research WL/FIGP-1 presents in an executive summary?
4. How do the readers of the executive summary perceive the various forms of multimedia with regard to effective information retrieval?

Organization of Thesis

In this thesis, I discuss the benefits of multimedia, characteristics of audience, and several methods for audience analysis. For my analysis, I customized one of the audience approaches outlined in the literature review in order to fit traditional audience analysis techniques with multimedia. In addition, I present the results of the analysis, which address audience characteristics and preferences concerning multimedia. Finally, based on the data results, I provide WL/FIGP-1 with some recommendations on how they could incorporate multimedia into their technical reporting. I also provide recommendations for further research based on some of the interviewees' comments.

II. Literature Review

Introduction

This literature review covers definitions of multimedia, the benefits of multimedia, usability and user focus issues, and audience analysis techniques. I refer to readers, users, and audience interchangeably.

Definitions

A meaningful discussion of multimedia requires clear definitions to establish a common frame of reference. As described in Chapter I, multimedia in the computer world refers to the interface of text, graphics, sound, and video in a single document. Unlike conventional paper forms of communication, multimedia documents are electronic and must be stored either on a hard drive or on external media such as floppy disks or CDs.

To get a good understanding of storage capacity for electronic media, consider the following: one page of paper requires roughly 2K storage space (2K equals two kilobytes). A 3 1/2" floppy disk can hold 1.44MB of information (a megabyte equals 1000 kilobytes). By comparison, a CD can hold 650MB of information--roughly equivalent to 325,000 pages of plain text (Vaughan, 1994:461).

Whereas plain text documents fit quite easily on standard floppy or compact disks, sound and video information require significantly more storage space. For example, 10

seconds of high quality sound require 1.8MB, but 10 seconds of video require 5.5MB. Combined, 10 seconds of video and sound require 7MB of storage space, or nearly 350,000% more storage space than one page of plain text (Rathbone, 1994:28).

Another form of multimedia that requires additional storage space is hypermedia. Hypermedia is a type of interactive media in which the information elements are linked into a structure in which the user has control over access to the information presented. Hypertext, then, is a form of media that allows the user to navigate through a document by selecting source words that link to additional information located in a given document (Vaughan, 1994:228).

Hypertext allows a user to search through an entire electronic document simply through the use of the indexed words. To find the same information in a plain text document would require the user to manually review each page to determine if the word appears. Because most technical report information comes in this linear text format, it is often difficult to find, focus, and filter relevant information needed by particular readers (Vaughan, 1994:229-230).

In essence, hypertext catalogs information for readers much like the subject catalog in a library system. Most people would not wander through stacks of books to find information on a given subject, yet readers must wade through "stacks" of text in a document to find particular information. Hypertext is a tool to dig out the particular information needed.

Multimedia Benefits

Multimedia addresses several of the five human senses and is therefore thought to be better than plain text at communicating certain types of information. Not all information works well in a multimedia format, but research suggests that some appropriate uses are for broad concepts and ideas, procedures, high-level explanations, and overview information (Henke, 1994:475). For example, video is a good means of explaining complex mechanical procedures (Benimoff, 1993:43).

Multimedia is also seen as simply more fun and engaging. In addition to providing a "measurable benefit by gaining and holding attention as well as interest," multimedia "improves information retention" (Vaughan, 1994:10). One educational application of multimedia involves an interactive Wild Kingdom scenario. The user, say a school child, selects "lions," pushes a button, and essentially "becomes" the lion. Through the software, the child might learn to see as a lion does--stalking prey, feeding its young, avoiding danger, or rolling on the grass. With such multimedia interaction, children could become motivated to find out more about lions than from a traditional linear text (Vaughan, 1994:14).

Other educational applications of multimedia yield similar benefits. For instance, a major casino currently uses a multimedia training program and claims the croupiers (people in charge of a gambling table) learn faster. The students also enjoy the "bookmarking" features of a training program on a CD--they can stop training, take a break, and resume training at their own pace (Piturro, 1994:60-62).

Such training benefits translate into cost savings in addition to user benefits. Average cost savings of 64 percent, and average time savings during delivery (the time it takes to present the information) of 31 percent, have been documented by the Institute for Defense Analysis (Fetterman, 1993:123). As well, organizations such as Federal Express, IBM, and the U.S. Army have studied the benefits of interactive applications. A summary of their studies revealed the following: higher content retention, faster learning curves, faster training compression, less delivery variance, better consistency of learning, and greater learning gains (Fetterman, 1993:128-129).

As defined previously, hypertext is a type of interactive multimedia that provides a means to link nodes of information. Hypertext employs "hot words," either superscripted or color coded words in a text document that a user can click on to receive more detailed information (Vaughan, 1994:228-230). To make hypertext even more useful, tools such as graphical browsers (a graphical representation of the layout of hypertext information) may be used to help a user navigate through information. In one study, the browsers did not prove to increase a user's comprehension of a text, but they did "improve the efficiency with which subjects moved through the documents, reducing the number of repeated nodes and increasing the proportion of available nodes read" (Wenger, 1994:231).

John Waterworth, in Multimedia Interaction with Computers: Human Factors Issues, looks at multimedia with regard to the display of information and its ability to provide interaction. He states that we still don't have hard and fast rules for exactly what type of

media or combination thereof is best for a given display (Waterworth, 1992:28). As evidence, he points out J.L. Alty's summary of media types:

> Alty suggests that purely auditory presentation can be better for recall of dialogue than if the visual modality is also utilized, whereas action is better recalled from a presentation which includes visual material. Diagrams seem to be better for conveying ideas, but text may be better for detail. (Waterworth, 1992:28)

With regard to interaction, multimedia often incorporates speech, touch, and vision, which further compound the creation of a software system or document. Waterworth goes on to describe a study of an interactive multimedia system and shows how it fared in terms of usability and benefits. The study involved training for military operations. The experiment had two trials. The first trial had a control group and test group that received the same classroom training. Subsequently, the test group received interactive computer-based training. Both the control and test groups were given evaluations upon completion of classroom training, but the test group was evaluated again after computer training. The test group's average score increased considerably after the computer training and was significantly higher than the control group.

The second trial tested a control and test group before any training, and then respectively tested the control group after classroom training and the test group after classroom and computer training. Again, the test group's post-computer training score was significantly higher than either of the pre-training scores, but not statistically different than the control group's post-training score (Waterworth, 1992:148-149).

Waterworth sums up the findings by stating that, in the first trial, the positive effect of the software is readily apparent. In the second trial, however, he merely echoes the

findings but does not draw any sharp conclusions. He offers some explanation as to why the difference between the post-training groups in the second trial was less dramatic, but concludes the result had more to do with the timing of the experiment than the software used. For Waterworth, "the most effective use of the software might thus be as an after-training 'booster'" (Waterworth, 1992:156-157).

With regard to the multimedia aspect of the software, Waterworth recommends (based on the participants' attitude assessments) that "more value will be added by increasing the multimedia aspects of the presentation, improving realism and involvement..." (Waterworth, 1992:159).

Usability and User Focus

While multimedia offers some obvious benefits, software designers and information presenters run the risk of information overload--incorporating a lot of information in a document simply because they can, but not because their users need it. The result is an overwhelmed or confused user who may not even retrieve the intended important information.

A focus on users during software development has recently increased in the computer industry. The concept of usability, defined in various ways but boiled down to the ease with which a user interacts with a computer document and retrieves information, "has been their [industrial software developers] major concern for the last year" (Labs, 1994:52).

Usability is gaining importance for three reasons:

1. The information age and the accompanying information explosion have greatly increased the amount of information that each of us must read and process each day; we no longer have as much time to read each piece of information as we once did. The information needs to be in a form that we can use readily,
2. High-tech items now pervade our lives--every day we deal with VCRs, programmable microwave ovens, and home computers, all of which require us to use information before we can use them effectively, and
3. We have less time to read and fathom information; we have a real need for *quick* access to and use of information. (Grice, 1991:178-179)

The user interface is a good gauge of how usable a document or program is. Designers often use metaphors when developing interfaces with users in mind (Blattner, 1994:25). One author states that a good user interface "fit[s] the user's motor skills, problem-solving strategies, and cognitive organization" (Benimoff, 1993:46). Essentially, software designers and computer document preparers can best take advantage of multimedia's benefits by first listening to users and then designing based on user needs and capabilities (Benimoff, 1993:46). As one producer of multimedia products sums it up, emphasize the target audience and their "needs, wants, and abilities" (Henke, 1994:475).

Audience

Exactly who is this target audience that's so crucial to successful computer programs and documents? As mentioned in the introductory chapter, executive summaries have a wide range of audiences and must provide useful information to this wide variety of readers. To best structure an executive summary, it is useful to know about audience characteristics.

This section discusses several audience approaches which include assuming audience characteristics based on a predefined category in which a reader is placed, seeking specific characteristics about audience such as organizational, demographic, or psychological information, and, finally, an approach that appears to integrate the concepts from the different approaches.

Before describing these approaches, I must acknowledge that the concept of audience analysis itself should not be taken for granted. Some research questioned the role of audience analysis in writing. Two works, "Breaking with a Tradition: New Directions in Audience Analysis," by Jo Allen, and "Audience Addressed/Audience Invoked: The Role of Audience in Composition Theory and Pedagogy," by Lisa Ede and Andrea Lunsford (on which Allen's article was partially based), question the traditional concept of analyzing your readers and writing for them (Allen, 1989:53-62; Ede and Lunsford, 1984:155-171).

Although the two articles do not discount audience analysis, they do point out that there are alternative ways to consider audience when writing. These articles point out that audiences may be "addressed" where specific readers are identified and addressed directly, or audiences may be "invoked" where readers are unknown or created based upon a given subject (Ede and Lunsford, 1984:155). Ede and Lunsford suggest that for any given writing, both audiences, addressed and invoked, should be considered. Allen adds that for technical writers, understanding what the audience can be expected to know is more important than demographic or situational analyses because then a writer can determine what level of detail needs to be included in a report (Allen, 1989:58).

Another approach to audience analysis involves classifying the readers into four or five main groups and analyzing each group to determine how to write for the readers. Kenneth W. Houp and Thomas E. Pearsall present identify four large divisions of audience--scientific, technical, lay, and combined--and offer their version of an audience analysis (Houp and Pearsall, 1968:47).

After determining which category of reader the report addresses, Houp and Pearsall offer characteristics about the group which the writer can assume. For example, if you're writing for someone in the scientific audience (defined by Houp and Pearsall as senior engineers or scientists with at least a master's in their field), then you can assume the readers know background information in their fields or standard technical jargon or the requisite mathematics to understand scientific formulas (Houp and Pearsall, 1968:47).

Houp and Pearsall don't actually offer a systematic way to analyze individual audiences. Rather, they describe each category of audience and ask the writer to concentrate on writing reports based on category description. For a combined audience, however, Houp and Pearsall ask the writer to consider the purpose of the report, and then to perhaps compartmentalize the report to accommodate the various readers (Houp and Pearsall, 1968:47-55).

Thomas Pearsall wrote another book on audience analysis shortly after the book he co-authored with Houp. This time Pearsall divided technical report audiences into five categories: layman, decision-maker or executive, expert, technician, and operator. Like his previous book, Pearsall describes the characteristics of each audience type and the assumptions about each. He also includes practical advice for writing a report. For

example, Pearsall says that "for the layman...keep things uncomplicated, interesting, practical, and, if possible, a touch dramatic" (Pearsall, 1969:xiv). For the executive, Pearsall states:

> He is more concerned with what things do rather than in how they work. He wants to know what effects a technological development will bring. He needs simple background. However, he can probably handle and wants a bit more technical background than does the layman. (Pearsall, 1969:xv)

Thomas L. Warren, in "Three Approaches to Reader Analysis," outlines demographic, organizational, and psychological approaches. His approaches serve to answer two questions: 1) "How do I find out who will read my text?" and 2) "How do I adapt that text to this (these) reader(s)?" (Warren, 1993:82).

The demographic analysis approach simply means gathering demographic information about an audience, for example, education or status, and then making inferences about the audience. The writer then "manipulate[s] text to fit the assumed reader or readers" (Warren, 1993:83). Warren uses Pearsall's five categories of audience--layman, decision-makers, experts, technician, and operators--to introduce broad assumptions about readers.

For organization analysis, the writer determines the reader's role within his/her organization. One general assumption about readers' roles is that "the higher in the organization a person is, the greater is the need for more general information" (Warren, 1993:84).

The psychological approach to reader analysis has the writer asking these three questions:

1. What does my reader want to know?

2. How can I help the reader to understand?

3. What do I want the reader to do with the material? (Warren, 1993:86)

The needs govern the amount of detail in the report. As Warren points out, this information helps the writer determine which information goes in the various parts of a report.

Mike Markel offers a similar approach to Warren's psychological approach to reader analysis in Writing in the Technical Fields. Markel cautions a writer to

> Think carefully about four aspects of your audience: their professional characteristics, their personal characteristics, their attitudes toward the subject, and their reasons for reading the document. (Markel, 1994:17)

By gathering the information Markel recommends, and by defining the purpose of writing a report, Markel claims the writer ends up with a "document that works," one that conveys the information the writer intends to present while meeting the needs of the readers (Markel, 1994:21).

Yet another approach to analyzing audience comes from Mathes and Stevenson (1991), who highlight three tasks as crucial: identifying, analyzing, and classifying readers (Mathes and Stevenson, 1991:32).

To identify readers means to create an "egocentric organization chart," which identifies readers based on their proximity to the writer within and outside the organization. An egocentric organization chart allows the writer to see the "lines of communication" between the writer and readers (Mathes and Stevenson, 1991:32-33). In addition, a writer identifies his readers to orient himself to the readers' needs instead of orienting himself to the subject matter.

Analyzing readers means characterizing them in terms of operational characteristics (their roles and responsibilities), objective characteristics (similar to Warren's demographic data), and personal characteristics (preferences) (Mathes and Stevenson, 1991:37-40). Each of these areas provides further insight to the needs of the readers. From the analysis, a writer might find out that his reader is visually oriented and would better understand complex issues if presented in a chart or picture.

Mathes and Stevenson also provide a "Form for Characterizing Individual Report Readers" that outlines specific issues to address in order to analyze readers. For example, their form asks for an individual's role in his or her organization, what the reader needs from a technical report, and what education level and field the reader possesses. Mathes and Stevenson's form is merely a guideline and can be expanded based on an individual writer's circumstances.

Finally, the audiences can be classified into three categories: primary (those that act and make decisions), secondary (those that are affected by actions and decisions), and nominal or immediate (those that transmit the report or its contents) (Mathes and Stevenson, 1991:40-44).

For specifically dealing with executive summaries, Mathes and Stevenson indicate that the audience is usually either primary or secondary, depending on the purpose of the report (Mathes and Stevenson, 1991:99). The authors also state that "from the management perspective...all managers read the summary or abstract of a report, but that few read the body or appendices" (Mathes and Stevenson, 1991:88). In summary,

managers read the report to gather information for a specific purpose, not just to acquire information.

Mathes and Stevenson provide one other bit of information about readers that is an open invitation for multimedia. "Readers don't read a report in a linear fashion from beginning to end; they read a report as a hierarchical structure, sorting out details within a framework of generalities" (Mathes and Stevenson, 1991:103).

Conclusion

The literature indicates that with an appropriate focus on users and with a systematic audience analysis, executive summaries can be developed into a multimedia format that will provide benefits for the executives who read them. Multimedia has the potential for more effectively conveying technical report information when such information can be expressed with video and/or sound and when the information can be linked within a single document. Current uses of multimedia suggest that additional ways of retrieving information offer benefits for users beyond traditional text.

Incorporating multimedia into a technical document, however, brings up the issues of usability and audience analysis. As the section on user focus showed, software designers recognize the importance of considering users when designing and developing software. Developing a multimedia technical document would not be entirely different, thus a focus on users of multimedia technical documents is warranted.

Conducting an audience analysis would be the first step to begin understanding what users need from multimedia technical documents. If WL/FIGP-1 intends to produce multimedia technical reports, an audience analysis would provide the report writers with information about the characteristics of their audience--useful in determining what should go in a report to begin with--and, with a consideration of multimedia, an audience analysis could show which forms of multimedia the report writers should consider for preparing executive summaries. Such summaries should save executives time in retrieving information and ease readers' ability to extract only the information they need to make decisions or implement research results.

III. Method

Introduction

The literature review described several similar approaches to analyzing an audience for the purpose of writing technical reports. The concept of gathering information on readers' objective, operational, and personal characteristics appeared in one form or another in much of the literature.

When deciding on an audience analysis technique, I looked at the salient points and advantages and disadvantages of the approaches I reviewed. Allen and Ede and Lunsford (Allen, 1989:53-62; Ede and Lunsford, 1984:155-171) provided some insight into how audiences can be invoked as well as addressed, and Allen acknowledged that a writer should know what a reader knows before writing, but neither of the works offered a clear means to look at existing audiences.

Houp and Pearsall's Reporting Technical Information (Houp and Pearsall, 1968) and Pearsall's Audience Analysis for Technical Writing (Pearsall, 1969) provide a good base to begin sorting out audiences by type and describing characteristics based on those types, but their approaches do not offer a means to look at individual audience characteristics.

Warren and Markel (Warren, 1993:81-87; Markel, 1994:17-19) address similar concepts. Warren's three approaches to audience analysis--demographic, organizational, and psychological--begin to offer a more complete picture of the audience when all three

approaches are taken together. Markel's four aspects of audience--professional characteristics, personal characteristics, attitudes toward subject, and reasons for reading a document--are similar to Warren's psychological approach to audience and represent a good base for an audience analysis.

It is Mathes and Stevenson's guidelines, however, that I used to base my analysis upon because they synthesize several useful approaches and their guidelines offered some specific ways to structure an analysis in a complete, concrete fashion suitable to multimedia.

This chapter discusses my data analysis methods and includes an audience analysis approach which assesses readers' opinions about multimedia.

Audience Analysis Approach

Using Mathes and Stevenson's guidelines for analyzing an audience as outlined in Chapter II, I identified, analyzed, and classified the readers of the WL/FIGP-1'S executive summaries. I sought to determine which forms of multimedia best suit their needs for retrieving the type of information WL/FIGP-1 presents, and also to get their opinions of the effectiveness of multimedia.

Ideally, a technical report writer would do a separate audience analysis for each report that he intends to write. For the purposes of specifically analyzing the WL/FIGP-1's readers and then determining their attitudes toward multimedia, I wanted to interview a

cross-section of report readers to give the branch an overall assessment of the audience they write for and the audience's familiarity with multimedia.

Identify the Audience. To identify the audience, I acquired a list from the WL/FIGP-1 office which contained the names and organizations of some of their readers. The readers varied from engineers on Wright-Patterson Air Force Base to contractors and industry engineers in the local area and nationwide. Not all readers receive all of the same reports, and not all readers use the reports for the same purpose. The Pilot/Vehicle Interface Technology Section chief indicated which individuals would be most likely to provide helpful information.

Determining an exact population who read the section's technical report would be extremely difficult because the office lists its reports with the Defense Technical Information Center (DTIC), an information source open to anyone working with or for the government to gather information about various technical subjects. In addition to the section distributing reports to specific users, then, any number of users could receive the reports from DTIC. Thus for my sample size, I sought merely to ensure that I covered the various known categories of readers: small, medium, and large industry; government offices, and any other miscellaneous categories.

Analyze the Audience. For my analysis, I conducted telephone interviews of 25 individuals from 20 organizations. The individuals' positions in their organizations included mostly management (presidents, program managers)and research (engineers, scientists). Using an interview form modeled after Mathes and Stevenson's "Form for Characterizing Individual Report Readers" (Mathes and Stevenson, 1992:41) and

"Checklist of Report Readers" (Mathes and Stevenson, 1992:50), I gathered information on the individuals' operational, objective, and personal characteristics. I then compiled demographic data on the subjects' ages, educational backgrounds, and years experience in their fields. I specifically requested information on the readers' roles in their organizations, not just duty titles. A copy of my interview form is in Appendix A.

Classify the Audience. I classified readers into the three categories suggested by Mathes and Stevenson and outlined earlier in the thesis--primary, secondary, and immediate--simply by defining the categories for the readers and asking them to choose which category applied to them for the purposes of reading WL/FIGP-1 reports. I asked those who had not received a WL/FIGP-1 report recently (within a year or more) to classify themselves based on how they use Wright Laboratory reports in general. In addition, I gathered information about why the audience reads the technical reports.

Multimedia. During the analysis interview, I briefly described sound, video, hypertext, and CD-ROM as they relate to multimedia documents and asked the readers to assess how useful each item would be for them in an executive summary. Sound and video address the issue of information presentation, while hypertext and CDs address how to access information. For ease of reference, I refer to sound, video, hypertext, and CD-ROM access as "forms" of multimedia because each item is either a form of displaying multimedia or a form of storing or accessing multimedia information. I chose the four forms based on the assumptions that (1) executive summaries could easily be produced incorporating these forms, and (2) the forms showed promise for improving the reader's ability to retrieve the information.

I used a Likert scale of 1 to 5 to assess the interviewees' opinions of the effectiveness of the various forms of multimedia, with 1 being least effective and 5 being most effective. By using a Likert scale, I could quantify readers' opinions of multimedia and compare the forms to each other.

In addition to asking for a numerical value associated with each form of multimedia, I devised several questions to elicit further comments about each form and to obtain some justification from readers for the values they had assigned. The questions were designed to make the interviewees think particularly about how the forms of multimedia might benefit them or be used in the executive summary portion of a technical report.

At the conclusion of the interview, I asked each of the respondents for an overall opinion of the topics we discussed. This opinion would indicate how receptive the users are to multimedia technology.

Analysis

After interviewing the 25 people, I compiled the data. For the numerical information--age, educational experience, time spent reading the executive summary, and value assessments for the four different forms of multimedia--I used Statistix and Microsoft Excel to determine the means and standard deviations as required.

Responses to the qualitative data--job responsibilities, why individuals read the technical reports, what specific information they expect from reports, and the comments associated with each form of multimedia--were grouped by question, and patterns or

trends among the responses were isolated. The results are presented in Chapter 4, Data Description and Analysis.

IV. Data Description and Analysis

Introduction

This chapter presents the results of my interviews with the readers of the WL/FIGP-1 technical reports. I group the responses by the four research questions posed in Chapter I.

Question 1

Question 1 reads " What information about executive summary readers' characteristics will aid writers in preparing technical reports?" What follows describes the readers in terms of their objective and operational characteristics by presenting the answers to the corresponding questions from the interview form (Appendix A). Appendix B: Summary Data contains responses for all questions on the interview form. Responses grouped by individual are in Appendix C: Raw Data.

Objective Characteristics. Objective characteristics are specific background data that are useful for understanding how a reader might approach the information in a report. In this study, I asked for the following objective information from the readers: age, educational background, and years spent working in their fields.

Of those who participated in the study, the typical report reader had a mean age of 46. The ages varied widely, however, with the youngest being 32 years old and the oldest being 63 years old. Coupled with information about the respondents' number of years'

experience in their career fields, the data shows that the group is roughly middle-aged and relatively experienced. The average number of years spent in their fields was just over 20. Again, the responses varied widely, with eight years' experience the minimum, the maximum, 38.

I also asked respondents to provide educational background--degrees earned and in which disciplines. Of the 25 respondents, 28% had bachelor's degrees only, 8% had some graduate study, 44% had master's degrees, and 20% had doctorates. This high percentage of readers with advanced degrees indicates that the audience is well educated and probably has a good understanding or ability to understand the complex information presented in technical reports. Almost all of the degrees, bachelor's and up, were in science, engineering, or mathematics. This information, coupled with the number of years experience, suggests that the WL/FIGP-1 audience is experienced and knowledgeable about the subjects of the WL/FIGP-1 reports.

Operational Characteristics. Operational characteristics describe a person's roles and responsibilities within his or her organization. For the purposes of writing a technical report, the relevant characteristics are job responsibilities, supervisory responsibilities, and, especially for the Pilot/Vehicle Interface Technology Section, information about how the report is used. Additional operational characteristics such as the information people need from the reports are included in the section dealing with the second research question.

Job Responsibilities. To understand the meaning of job responsibilities, it helps to first know what types of organizations use the WL/FIGP-1 reports. As mentioned in Chapter III, small, medium and large industry, government offices, as well as some other

organizations that do not fit neatly into one of the previous categories, all use the section's reports. The small business category accounted for 35% of the organizations, while medium, large, government, and other organizations represented 20, 15, 20, and 10 percent respectively. You may recall that I interviewed 25 individuals but there were only 20 different organizations.

A review of the responsibilities within these organizations indicates that jobs could be classified in roughly three areas: managerial/executive, technical, or other. The categories basically group individuals' roles within their organizations, not just how they use technical reports. In some cases, individuals overlap into two categories. For example, a principal research engineer may manage other engineers while still performing technically-oriented engineering duties. Likewise, someone whose principal job responsibilities fall in the "other" category may still conduct research (here categorized as "technical").

The managerial and executive job responsibilities included program and project management, strategic planning, product and program development, market and research opportunity development, and business management. The technical responsibilities included consultation, system design, development and verification, research, process reporting, and statistical analysis. The responsibilities that did not fall into either the managerial or technical categories included teaching, coordinating between government and industry, and promoting electronic commerce to small businesses.

Supervisory Responsibilities. Almost half (12 out of 25) of the individuals I interviewed do not supervise anyone. Of the remaining 13 respondents, the maximum number supervised was 15 and the minimum was 2. The jobs varied slightly, most of the

supervised individuals had technical jobs--engineers, software developers, and scientists. A few administrative personnel and safety, manufacturing, finance, and contracting types rounded out the group.

Report Information. Besides knowing what people do in their jobs, I wanted to give the Pilot/Vehicle Interface Technology Section an idea of how people use technical reports in general. To compare how Wright Laboratory fits into the users realm of technical knowledge acquisition, I asked respondents how many technical reports they receive from any source and, of those, how many come from Wright Laboratory. WL/FIGP-1 generates about five reports a year and Wright Laboratory as a whole generates about 20 reports per month.

The average number of reports received from any source was 3.92 per month, with some people receiving as many as 50 a month. From Wright Laboratory, respondents received 1.15 reports on average, with 12.5 being the highest and zero the lowest. Those that received zero reports indicated that they have used reports in the past but do not now receive reports on a regular basis or have not received one in over a year.

I also asked individuals to estimate what percentage of the decisions they make in their jobs is a direct result of the WL reports. The mean percentage was 14.79, with the highest being 75% (this individual's work directly supports WL) and the lowest being zero. Of the six respondents who gave zero as a response, four claimed that the reports provide relevant contributing information but that they simply did not make a decision *directly* based on a report.

As a prelude to the benefits of multimedia, I also asked respondents to assess how much time, in minutes, they spend reading the executive summary portion of a technical report. The average time spent was 20.04 minutes, with 120 minutes the most time spent and two minutes the least.

Question 2

My second research question is "What do the readers need from the WL/FIGP-1 reports?" First I classified the audience into primary, secondary, or nominal readers is the first step, and then I asked them why they read the reports and what specific information they expect from the reports.

Classify the Audience. To classify the audience, I defined the three categories--primary, secondary, and nominal--and asked the readers to identify the category in which they belong. Depending on the subject of the report, some individuals claimed they could be in any one of the three categories, but in those cases I asked the individual to respond based on how he or she would normally use a report from WL/FIGP-1. Table 1 shows a breakdown of report readers.

It is significant to note from Table 1 that the majority of the readers who use WL/FIGP-1 technical reports are indeed decision makers. For WL/FIGP-1 then, it is important that their reports meet the needs of those readers. Individual responses show each reader's category and needs from technical reports and are listed in Appendix C.

TABLE 1

READER CLASSIFICATION

Category	Number	%
Primary	16	64
Secondary	5	20
Nominal	4	16
Total	25	100

Reasons to Read WL/FIGP-1 Reports. By far the most important reason the individuals I interviewed read the WL/FIGP-1 reports (mentioned in 13 out of the 25 responses) is to stay technically current. Some other reasons that were given by more than one respondent include:

1. Related to work or present contract
2. Affects how research is done
3. Searching for technical content
4. Looking for new requirements.

In addition, some reasons are related but with different focuses: to look for techniques and tools and to know lessons learned that might apply in the laboratory, to find out the Air Force's interests and to apply the technical information to the Army. Some reasons are purely business related: find out where to put marketing dollars and find out what the competitors are doing. And one individual simply stated that he reads the technical

reports because Wright Laboratory is an important customer. A complete listing of the individual reasons is in Appendix B: Summary Data.

Specific Information. When I requested what specific information readers expect from the WL/FIGP-1 reports, some of the responses overlapped with the responses from the previous question. Results are the most common specific information sought--mentioned by six respondents. Following results is none--no specific information expected. Three respondents looked for the maturity of a technology. A complete listing of specific information sought is in Appendix B.

Question 3

I derived my answer to my third research question, "Which forms of multimedia are best suited for conveying the type of research WL/FIGP-1 presents in an executive summary?" primarily from the literature review and by analyzing the type of research WL/FIGP-1 conducts.

As identified in Chapter I, cockpit technology, particularly pilot/vehicle interface research, involves human factors. Because pilots process information using visual and audio cues, cockpit research naturally includes both visual and aural information. As mentioned in the methods chapter, I chose sound, video, hypertext, and CD-ROM as the four forms I would question the readers about. By definition, multimedia employs sound and video, so these two forms must be included in a multimedia assessment.

Pairing up visual and aural research with video and sound multimedia capabilities would seem obvious. I included hypertext because of its indexing features. When looking for specific information in an executive summary or an entire technical report, the ability to quickly pinpoint that information should be invaluable and ideally would reduce the amount of time a reader needs to get the information he or she wants out of a report.

The last form of multimedia I chose to explore is accessibility. As stated in the literature review, a CD can store large quantities of information more efficiently than a floppy disk or paper. For the reader, receiving reports on CD involves issues such as physical storage size (a CD is thin plastic about 4 3/4" in diameter) and computer hardware availability to use a CD. Because floppy disks simply don't have the storage capability for video and sound, and because it is physically impossible to put video, sound, or hypertext on paper, CDs are virtually a necessity for multimedia presentations.

Question 4

The bulk of the interview form concentrated on answering research question 4, "How do the readers of the executive summary perceive the various forms of multimedia with regard to effective information retrieval?" The following section presents the results of the Likert scale value assessment and reviews each of the forms--sound, video, hypertext, and CD-ROM--individually, concluding with the readers' overall assessment of multimedia.

Value Assessment. Table 2 shows summary statistical data for the four forms of multimedia. Based on the question, "On a scale of 1 to 5, with 1 being least effective and 5 being most effective, how useful would sound/video/hypertext/CD-ROM access be in effectively retrieving information from an executive summary?" the interviewees responses can be summarized in the table.

Table 2 indicates that respondents saw the most value in hypertext for retrieving information from an executive summary. The individual discussions on each form of multimedia shed light on readers' perceptions and their reasoning, particularly those related to the values associated with the four forms.

TABLE 2

MULTIMEDIA VALUE ASSESSMENT

Variable	N	Mean	SD	Min	Max
Sound	25	2.92	1.5524	1	5
Video	25	4.32	.9882	1	5
Hypertext	25	4.48	.8226	2	5
CD-ROM	25	4.04	1.0198	2	5

Sound. When asking readers about sound, I wanted to get an idea of how they viewed sound as a means of presenting information. Sound received the lowest mean rating of the four forms of multimedia but I had expected it to fare almost as well as video. The

readers' comments, given after they had assessed sound on the scale of one to five, stressed the desire for interactive sound, meaning they wanted the ability to control when the sound would be presented while reviewing a report.

Possible uses of sound in multimedia reports include narration, background music, or other sound effects that might illustrate a point. Eight of the 25 respondents mentioned that the sound could possibly be distracting and five stressed that sound could be distracting if inappropriate or out of context. One individual commented that sound would be very useful for presenting aural information like auditory warning signals, but would not want sound as narration. Several respondents stated that they would want to control the pace of a narrative presentation.

When asked if hearing information--as opposed to or in conjunction with reading information--aided in learning faster or retaining information, the audience had a split response. Twelve of the 25 claimed they learn information faster from hearing and six claimed they learned faster from reading. Other responses included "no difference" and "I'm really visually oriented." As far as retaining information, 10 out of the 25 claimed they retained information better by hearing it, while three claimed reading worked better for them, and five others mentioned the combination of reading and hearing usually worked best.

I also wanted to know how multimedia would influence the readers' desire to read technical reports so I asked if they would be more inclined to review a report knowing that it had sound attached. Twelve readers responded positively but with qualifications. Of the 12, six said they would review reports for the novelty of sound, but then they

would pretty much revert back to reviewing based on subject matter. Three others of that first 12 claimed they would if the reports could be made "more fun" or "less boring." Four respondents said they would not be more inclined to review the report and two others claimed they would only if the sound were directly related to the research being presented.

One respondent noted that having sound in a report would be nice, but he would like to see some standardized format for using sound.

Video. When discussing video, I wanted to know if the users believed that having video would help in understanding complex technical material. Not surprisingly, everyone responded that there are times when they read technical material and desire a dynamic, visual presentation to understand the material. As to the types of information the readers wanted dynamically, they mentioned design and experiments, visual constructs, technical cockpit information, real-time simulation, maintenance concepts, lab setups and wiring diagrams. Admittedly not all of the above information would necessarily appear in an executive summary.

When asked if having a visual representation would reduce the amount of time needed to understand material, 80 percent responded positively. The type of information desired visually included display formats and interactions. Only one individual responded negatively to the question and three qualified their answers by stating that it depended on the subject and/or the quality of the video.

In addition to exploring how video could help reader understanding, I wanted to find out for WL/FIGP-1 if presenting information on video would cause their readers to react

favorably or otherwise be persuaded by the presentation. Six claimed basically that the data would win them over, not just the presentation. Like sound, there were a couple qualifications for a positive response: visuals must be well done and they must complement the material. Nine answered outright that they would be more likely to be persuaded.

Miscellaneous comments pointed out concerns about the quality of the video. Some felt that a poorly done video could detract more from a presentation than add to it. Others stressed the value of video in representing visually-oriented research, like seeing consecutive screens for what happens in a system when an engineer works with that system--what happens next when he pushes this or that button, for example.

Hypertext. The highest rated of the four forms, hypertext stands as a "doable" technology offering the interactivity desired by the audience. In order to find specific information or to see if a report addresses any of their information needs, most readers currently use the table of contents, index, or introduction.

Over half of the respondents read the executive summary cover to cover while four look immediately for specific information. Others may skim first to see if there's any information worth pursuing.

Most of the readers have already used hypertext, either on the World Wide Web or other computer documents. When asked about their experiences with hypertext, 8 of the 17 who have used hypertext said they had no trouble navigating around in the documents. A few mentioned they had sometimes found using hypertext to be confusing but conceded

that earlier versions of the technology may have been weak. Only one mentioned that he became totally lost after two or three links.

When asked how hypertext might improve the readers' ability to use a technical report more effectively, they came up with a variety of answers. Here are a few of the common ones:

1. Use to find supporting information,
2. Use to home in on particular information,
3. Find sections of interest and then pursue,
4. Follow a thread or connect a series of topics,
5. Use to understand connections between information, as opposed to just knowing that connections exist.

One concern about hypertext arises from the reader's expectation of the information that appears after clicking on a "hot" word. Several readers mentioned that the links should be context-sensitive and possibly offer the ability to toggle back and forth between general and specific information.

One individual noted that he would be more likely to get details on a subject by using hypertext rather than searching page by page, and others mentioned that hypertext would definitely save them time in retrieving information.

CD-ROM. CD-ROMs are one of the main ways to store and distribute multimedia reports. Having information on CD, however, raises some important user issues. First, I wanted to know if people even have the capability to read a technical report on CD-ROM if the WL/FIGP-1 sent one to them. Twelve of the readers have a CD-ROM reader on

their office computers, 10 have access to one in their offices, and 3 do not have access at all at work. Of the ones who do not have their own CD-ROM readers or one at work, only one envisioned a resource conflict with trying to read a CD. Most claimed that the cost to purchase CD-ROM readers would not be prohibitive in their companies and some believed that they're moving toward that technology anyway. All but one individual could install a CD themselves.

With regard to the issue of paper versus paperless means of disseminating and storing information, most commented that they would want the ability to print portions of a report off a CD for the purposes of marking, highlighting, or handing out pertinent information to others in their organization. Only one said he would not want a paper copy. And only one said that he would want an entire paper copy, not just portions of a report, because continuous reading off a computer screen creates strain for his eyes.

Other issues about CD-ROMs included dramatically reduced storage space, but a user must have CD-ROM capability on his office computer just to read the report. A CD is certainly more portable than a large paper document, but one would have to have a portable computer or assurance of a computer at the destination to access the information on the CD.

Several people compared accessing information off of the World Wide Web as opposed to CD. The positive feature of CDs is their relatively quicker access time but the World Wide Web contains a lot of information from a variety of sources. One issue that might affect WL/FIGP-1's ability to put their technical reports on CD is security of their

information. The branch may have better control over who receives their information via CD rather than the Web.

Overall Assessment. When asked to choose one form of multimedia over another, the readers ranked hypertext and video one and two respectively, many assuming that CD would have to be the medium. When the readers were asked to choose a combination, again hypertext and CD won out but several readers commented that the media should be related to the research. Ideally, some claimed, a report would contain all of the forms of multimedia.

Above all, the respondents held that there was great potential in multimedia but there are issues to deal with such as cost versus benefit, the timeliness of producing a multimedia package, and that the relative time and energy expended to create the report wouldn't approach that of conducting the research itself. Some cautioned that there's a gap between what we expect from multimedia and what we get, and one claimed that to simply put the text onto a CD would not be a good use of the technology. The most promise exists in aiding understanding and saving time retrieving information.

V. Conclusions and Recommendations

Conclusions

The audience analysis and multimedia assessment offer the Pilot/Vehicle Interface Technology Section useful information to consider when preparing executive summaries in general, and when preparing executive summaries in multimedia. The reader characteristics I presented in Chapter IV give writers an insight into what readers expect from the reports, how readers use the reports, and how those readers would want to see reports in multimedia.

By understanding that most of their readers want to keep current on technological advances and, specifically, want to know research results, report preparers can focus their efforts on ensuring they are communicating effectively to meet those reader needs. Preparers can also use this information to narrow their focus and concentrate their energies on deciding what particular information should be put into a report and, ultimately, what information should be put into multimedia.

While the highest number of readers classified themselves as primary readers, the low number of decisions that they make based directly on the WL/FIGP-1 reports suggests that the reports serve mostly as contributing information. When preparing an executive summary, then, writers should take care to point the readers to the appropriate sections of the report that provide supporting information. The short amount of time that readers

spend reading the executive summary--20 minutes on average--tells the report writer that the summary must be as brief and effective as possible.

To consider using multimedia as an effective means of presenting information in an executive summary, then, writers should use whichever form of multimedia conveys a given piece of information in the most effective and most easily understood means possible. According to the data collected, most readers think that video is a good means to reduce the amount of time needed to understand technical information.

As noted in the summary statistics of the multimedia assessment, however, hypertext topped the list as the most effective of the four forms discussed for retrieving information from an executive summary. It is implied, though not explicitly stated, that if an executive summary is prepared in hypertext, the rest of the document must be prepared in hypertext in order for hypertext to be more effective than plain text. The implication for the report writer is that he must now consider how the information in a given technical report is linked together, rather than just presenting all the information in a linear form. In addition, this study's respondents voiced concerns about how hypertext needs to be context-sensitive, thus, the writer will have to carefully consider what type of information a reader expects when he chooses a "hot word."

Another concern about preparing reports in multimedia is the ability to print portions of the document. Even though the respondents appear ready and willing to embrace multimedia technical documents, they still need to be able to highlight information or distribute it to other people in their organizations. Report writers, then, should consider

what information must be represented in a plain text format, even though it might also be represented visually.

Recommendations

To pursue the goal of putting a technical report into multimedia, further research should concentrate on a cost/benefit analysis (including dollar costs as well as man-hours required), the technological requirements to build a document using sound, video, hypertext, or CD, and the feasibility of disseminating information on the World Wide Web.

A careful analysis of the many software programs that already exist to put documents into a hypertext format needs to be done as well as a look at the equipment needed to put information on a CD. The unique opportunity of putting information on the World Wide Web could save money as opposed to printing CDs, but concerns about security and access to sensitive technical information will have to be addressed.

Summary

Ideally, a report writer would conduct an audience analysis before each report. In this thesis, however, I sought merely to give the branch some insight into their audience's background and how they use the branch's reports. With an appropriate focus on users and with a systematic audience analysis, executive summaries can be developed into a multimedia format that will provide benefits for the executives who read them. Such

summaries should save executives time in retrieving information and ease their ability to extract only the information they need to make decisions or implement research results.

Appendix A: Interview Form

Wright Lab's Executive Summary Audience and the Multimedia that Suits Them

Purpose of interview: I seek information about the audience that uses the executive summary portion of a Wright Lab Pilot/Vehicle Interface research report. The branch chief requested this type of information to see how he might effectively use multimedia to transfer information as opposed to a plain text document. By multimedia, I mean the incorporation of sound (recorded music and voice) and dynamic graphics (video and/or animation) as well as static text & graphics.

I'll be asking some demographic and job-related information, and then I'll describe some characteristics and applications of multimedia technology and get your opinion on how useful they'd be to you.

OPERATIONAL INFORMATION

1. Full Name _____

2. Organization _____

3. Job Title (Op)_____

4. Before I get your job information, I'd like you to put yourself into one of three categories of reader that I'll read off to you. I'm just using these categories to stay consistent with some research literature I've already reviewed.

   Primary--decision maker, acts on information _____

   Secondary--affected by actions and decisions _____

   Nominal--transmit report or contents _____

5. Why do you read the WL/FIGP-1 reports?
(Op)_____

6. What specific information do you expect from the reports?
(Op)_____

7. Basic Responsibilities in Job (Op)_____

8. How many people do you supervise? _____

9. What kinds of jobs do they hold? _____

REPORT INFORMATION

10. How often do you receive reports relevant to your field? _____

11. How many are from Wright Laboratory? % and # _____

12. How much time do you spend reading the executive summary? (in minutes)
_____

13. How many of your decisions are based directly on the reports? (importance? percentage?)_____

OBJECTIVE INFORMATION

14. Age (Obj) _____

15. Years in field (Obj)_____

16. Education (degrees earned) (Obj)_____

_____

MULTIMEDIA TECHNOLOGY ASSESSMENT

Now I'm going to describe four qualities of multimedia that may appear in a computer version of the executive summary. I'm interested in assessing your opinion of the technology, how it might be useful to you, how familiar you are with it. The four areas are sound, video, hypertext and CD-ROM.

Sound

First, sound. More than just beeps and buzzes when you hit the wrong button on a computer, sound in the multimedia arena means voice--talking; for example, hearing someone describe something to you while you see it on screen. Another example is hearing the noise an engine makes as its running.

17. On a scale of 1 to 5, how useful would sound be in effectively retrieving information from an executive summary report, with 1 being least effective and 5 being most effective?
_____

a. In your experience, do you learn faster by reading and hearing? passive vs interactive?

b. Do you retain information better?

c. Would the sound possibly be distracting?

d. Would you be more inclined to review report?

Comments: _____

_____

Video

Next, video. Here I mean moving pictures or graphics, not just static pictures on a screen. An example would be seeing the pilot's heads-up display as it completes maneuvers as if you were sitting in the pilot position.

18. On a scale of 1 to 5, how useful would video be in effectively retrieving information from an executive summary report, with 1 being least effective and 5 being most effective?

_____

a. Have you read without understanding exactly how something works and wished you had a dynamic presentation?

b. Would a visual representation reduce the amount of time you need to understand material?

c. Is seeing something on video more likely to persuade you or cause you to react favorably to the material?

Comments (video, cont'd): _____

_____

Hypertext

Hypertext is a system where words are keyed to other words within the document. Hypertext words appear in either bold print or a different color--not all words are linked to every other word. For example, suppose you were reading a report on a new cockpit design and it dealt with ergonomics, testing, and pilot reaction among other things. You're reading their test results but you're not sure if the results measured what you

would have wanted tested. In a hypertext document, you could double click on "test" and you might receive further details on the testing procedure.

The links in hypertext can be designed by the report designer or by a computer program that "reads" the report and determines appropriate links.

19. On a scale of 1 to 5, how effective would hypertext be in effectively retrieving information from an executive summary report, with 1 being least effective and 5 being most effective? _____

a. Do you refer to the report index often (going to other parts of the document to look things up)? (define often)

b. Do you pick out specific information or read the executive summary "cover to cover"?

c. If you've used hypertext, have you ever found it to be confusing or have you had difficulty navigating through a document?

d. How would hypertext facilitate or improve your ability to use the document effectively?

Comments: _____

_____

CD-ROM

The last technology I'll discuss is CD-ROM.

First, do you already have a CD-ROM reader installed on your office computer?
Yes _____ No _____

Instead of receiving the technical report on paper, you would receive the text--and possibly sound, video and hypertext--on a CD. In order to read the document, you must have a computer system that has multimedia capabilities, including a CD-ROM reader. Once material is written onto a CD, it cannot be changed. (Writers usually produce new versions of the CD if necessary.) The CD can store a lot of information and looks and weighs the same as a music CD.

20. On a scale of 1 to 5, how effective would having a document on CD-ROM be in effectively retrieving information from an executive summary report, with 1 being least effective and 5 being most effective? _____

a. Would the cost of purchasing a CD-ROM reader to review Wright Lab reports be prohibitive?

b. Would you want a paper copy of the text in addition to the CD?

c. Could you install a CD yourself?

Comments: _____

_____

OVERALL ASSESSMENT

21. I'd now like to get your overall opinion.

a. Would you prefer one form of multimedia over another? Explain.

b. Would you want all or none, or a specific combination? Explain.

c. What is your opinion of the overall usefulness of the forms of multimedia we've discussed?

Thank you for your time. The information you provided will help Wright Laboratory in preparing their technical reports.

Appendix B: Summary Data

This document compiles the answers to the interview questions by question.

OPERATIONAL INFORMATION

1. Full Name

2. Organization (by category)

	N	%
Small Business	7	35
Medium Business	4	20
Large Industry	3	15
Gov't offices	4	20
Other	2	10
Total	20	100

3. Job Title and 7. Basic Responsibilities in Job

a. President, Research Institute--bridge the gap; find research opportunities between WL and universities
b. Senior Engineer--consult for WL, help make programmatic decisions in avionics
c. Aerospace Engineer--staff engineer in XP, WL for quality programs at large
d. Senior Research Scientist--control systems engineer, algorithm developer
e. Principal Research Engineer--manage groups of engineers, students; signal processing, statistical analysis
f. Technical Staff Advanced Avionics--describe engineering process for project; make collection of technical information produced on program for posterity
g. Director, Aviation Systems Division--tech & managerial, direction of organization, set goals for division, budget, strategic planning, resource usage, technical work
h. Manager, Electronic Warfare Systems--requirements analysis, find/develop market opportunities, participate in program management, support program managers at operational divisions
i. Electronics Engineer--manage IRD, look at 300 commercial works pertaining to weapons, find link for WL
j. Escape Systems Integrated Product Team Lead--design and develop F-22 escape system
k. F-22 Pilot/Vehicle Interface Lead--manage contractor efforts, development & verification F-22 PVI design
l. Systems Analyst--promote elec commerce to sm & lg business; teach

m. Aerospace Engineer--assist technical representatives for contracting office, review contractor progress & status
n. Computer Specialist--capacity planning; studies on computers necessary for support
o. Program Manager--lead groups of engineers, coordinate between software programs, synergy between programs
p. Vice President--general manager government systems business unit; accountability & responsibility for profit/loss; new business technology
q. Vice President, Advanced Program--develop new electronic products
r. President, Senior Research--project management, business management
s. Principal Scientist--functional and project manager, responsible for overall technological capabilities of company
t. Systems Engineer/Project Manager--how to infuse new processor technology into B-2; make defensive avionics suite
u. Division Manager--program management, division management, program development and marketing, develop programs and customers, put together technology and science
v. Professor of Mathematics & Computer Science--teach, research specializes in artificial intelligence
w. Consultant--in SURVIAC (Survivability Vulnerability Information Analysis Center)
x. International Program Manager--coordinate/facilitate international cooperative agreements; placement here and abroad of scientists and engineers in exchange programs
y. Aerospace Engineer Integration Division--runs contracts, advanced integration planning

4. Reader Category:

	#	%
Primary	16	64
Secondary	5	20
Nominal	4	16
Total	25	100

Ditto marks indicate duplicate responses--one used each time response is repeated

5. Why do you read the WL/FIGP-1 reports?

- Stay technically current""""""""""""""""""(stay abreast of emerging technologies)
- Not remain in vacuum
- Use as references
- Look for techniques and tools
- Lessons learned to bring back to laboratory (his work environment)
- Related to contract or something related to work""(work is teaching--not necessarily contract work)
- May affect how we choose to conduct research"
- Because WL is an important customer

- Determine if there's a niche that his company can respond to"(new requirements)
- Filter information for various programs--compile info and then disseminate again
- Look for gaps in information, then share and try to find mutual interest to conduct research
- Apply technology to Army
- Find out Air Force's interests
- Find out what WL is doing
- Business development capacity
- Contributing market and research
- Use to put marketing dollars in right areas
- Build teams to chase business
- Find out what competitors are doing
- Technical content"
- Look for supporting information for SURVIAC
- Understand mission/technical focus for a potential cooperative effort & use information to assist and develop agreements
- Looking for ideas

6. What specific information do you expect from the reports?

- Research trends
- Research types
- Who's doing research"(what progress has been made--use to keep in touch with competition)
- What are the Air Force's interests*(mission needs)
- Technologies that may be applicable in other areas""(interconnection of technology)
- Results""""""""(new things discovered)
- Suggested courses of action
- Recommended follow-up activity
- Highlights for other areas that need future investigation
- Future programs
- Technical approach to solving a problem
- Use as field manual to make information available to next person
- None"""""(rarely get specific in exec, just other people's streams of thoughts
- Subject dependent*
- Maturity of technology""(in synthetic environments--helmet-mounted displays)
- Limitations of research
- Basic assumptions
- Schedule and time line
- Human factors studies in cockpit and training
- Description of man-in-the-loop experience, simulation/flight design experience
- Supporting information to help validate work his company's already done

8. How many people do you supervise?

Mean = 3.76

9. What kinds of jobs do they hold?

- administrative
- engineers
- software developers
- scientists
- safety
- manufacturing
- finance
- contracting
- program manager
- R & D

REPORT INFORMATION

10. How often do you receive reports relevant to your field?
    Mean = 3.90

11. How many are from Wright Laboratory?
    Mean number = 1.16
    Mean percentage = .32

12. How much time do you spend reading the executive summary? (in minutes)
    Mean minutes = 20.04

13. How many of your decisions are based directly on the reports? (percentage)
    Mean percentage = 14.79

OBJECTIVE INFORMATION

14. Age:

Mean	SD	Min	Max
46.08	8.475	32	63

15. Years in field:

Mean	SD	Min	Max
20.16	8.67	8	38

16. Educational Background:

	#	%
Bachelor's	7	28
Some grad	2	8
Master's	11	44
Doctorate	5	20
Total	25	100

MULTIMEDIA TECHNOLOGY ASSESSMENT

Variable	N	Mean	SD	Min	Max
Sound	25	2.92	1.5524	1	5
Video	25	4.32	.9882	1	5
Hypertext	25	4.48	.8226	2	5
CD-ROM	25	4.04	1.0198	2	5

Comments: Respondents comments for each of the questions about the forms of multimedia are grouped by responses. Ditto marks "" indicate repeated or similar responses. Comments in parentheses are additional thoughts related to the response.

17. Sound

a. In your experience, do you learn faster by reading and hearing? passive vs interactive

- hearing faster depends on what you're learning
- yes""""""""""""""""""""""(in general)(hear what I'm reading, concentrate better)
- no"
- don't know
- reading"""""""""(I hear, I'm awa re; I see, I remember; I do, I understand)(wants quiet)(slow at hearing)(haven't had much experience with multimedia)
- for lecture accompanied by notes, no difference
- brain can process only one at a time
- visual

b. Do you retain information better?
- retain better by hearing""""""""""""(but not simultaneously)
- retain actually visually oriented""(see first, then hear)
- combination"""""""
- reading""(own pace)
- NA
- same
- some extra retention but not comprehension

c. Would the sound possibly be distracting?
- yes, doesn't like sound while reading"""""(one or the other)[5](would turn off)(just wants text)
- annoying
- not if sound were commentary--music with words would be distracting""
- likes books on tape
- distracting to coworkers
- yes, mind wants to think but a narration would keep going, disrupts concentration""""(could take a longer time to retrieve a file, break up flow of info, doesn't want to be welded to exec summ, just skim, pace)
- interactive sound would help""""(want ability to control, could slo w you down)
- no, neutral"
- maybe"
- if out of context or inappropriate"""""(not done properly)
- when fatigued

d. Would you be more inclined to review report?
- yes"""""""(if you can make it more fun, less boring, but would want to see some standardized format)
- no""""
- probably"
- depends on sound: if just for reading, then superfluous; if demonstrating noise level phenomena, etc., then useful (if addresses content)
- novelty at first, then depends on subject"""""(if effective, then yes; novelty, then no)
- slightly, wants information to communicate technical content
- after novelty, if topic area were directly related to auditory info

e. Miscellaneous (sound)
- useful if describing aural information like warning signals
- nice to have main points reinforced at end
- most useful for acoustics, speech recognition
- useful to pop in a cassette
- useful to describe what a boost pump sounds like, for example, then useful
- would listen to text
- wants to listen at own pace(interactive)
- depends on how pertinent

18. Video

a. Have you read without understanding exactly how something works and wished you had a dynamic presentation?

- yes--design and experiments, visual constructs, right brain constructs"""""""""""""""""""""""""""""""""""""(tech reports; sometimes tabular info, too

technical and can't draw a mental picture; cockpit research specifically, many, many times; technical cockpit information; not necessarily in exec summ, but certainly in detailed portion; changes in maneuvering; most of the time; helpful; real-time simulation; animation extremely powerful for depicting processes; maintenance concepts; lab setups, wiring diagrams

- can't get all on CD yet

b. Would a visual representation reduce the amount of time you need to understand material?

- yes, helps understand""""""""""""""""""""""""""""""""""" (especially display formats, interactions; some subjects, graphs; could by help button, if obscure ideas are dealt with)
- typically reduces amount of time
- no
- probably
- perhaps, depends on subject""(depends on if the represent ation were detailed enough, whitewashing doesn't help, video should be as detailed as data)

c. Is seeing something on video more likely to persuade you or cause you to react favorably to the material?

- not persuaded one way or another""""""(must be able to understand, and be a good presentation; techno geek needs to know more info; ability to convey info clearly and concisely is more important; doesn't diminish importance, data will win or not)
- no, may give better understanding, sometimes can tell by picture if something's going to work or not, but picture must match words
- yes, unless done poorly[11][23]
- yes"""""""""""""""""(disclaimers tough to produce, usually good unless not telling truth; most likely because would allow to decide more quickly; partly human nature, must be well thought out; see investment in cost and time; would certainly stand out if done right; because gives more information, just like color focuses eye on what you want it to, can see changes and rates of changes, simple things help a lot, wind tunnel)
- probably depends on quality of visual, if well done, not confusing, could be very persuasive" (complements material, color makes vivid, even poor quality can elicit emotional response)
- depends, relies on content vice presentations format; however, if the resulting presentation is more accurate, then that's the advantage
- perhaps, minimal

d. Miscellaneous (video)

- invaluable, see screens as engineer uses system; ex push a button, then go to what will happen after you push the button form engineer's viewpoint
- wants control over video ex. dragging bar for a temporal display

- concerned with quality of picture
- depends on nature of work, frequently experiment or flight test information, simulation, time-dimension
- picture's worth a thousand words""
- subject matter dependent--related to airplanes, to see helps
- usefulness of video depends on how it's done, if poorly, then not"(bad video would detract)
- quality would have to be full screen, clarity of image, resolution
- eyes tire when reading stuff off screen
- high resolution study

19. Hypertext

a. Do you refer to the report index often (going to other parts of the document to look things up)?

- doesn't use index"
- doesn't use index, looks for key words"(skips around)
- yes, needs a general road map""""""""""""(if report has several distinct areas, otherwise read front to back)
- intro, table of contents, then index""(reads pictures and captions)
- uses index and TABLE OF CONTENTS"""""
- title, author
- reads exec summ, then TABLE OF CONTENTS
- uses Evelyn Wood method, skims chapters, then focuses

b. Do you pick out specific information or read the executive summary "cover to cover"?

- reads cover to cover""""""""""""""""""""""""(first time, then might go back to build up info; unless it's bad; because not that long; picks up nuances in words)
- skim"""""""
- skims exec summ, uses TABLE OF CONTENTS to find exactly what information/details
- looks for specific information"""""
- depends on topic, if pressed for time, then just scans

Have you ever found hypertext to be confusing or have you had trouble navigating in hypertext documents?

- not found confusing""""""""""""(early models may have been weak)
- sometimes confusing"""""""""""" (and some trouble navigating; if it doesn't have a good history mechanism; don't know what terms mean; if can't find info)
- biggest problem after 2 or 3 links, then totally lost

c. How would hypertext facilitate or improve your ability to use the document effectively?

- when I have to support something, look for pieces to support gaps in knowledge""""
- save for me from flipping back and forth, can hone in, side rabbit trail chase, needed to satisfy before moving on
- reference 2 different works to compare, would probably look for more info
- find info that I'm interested in right now
- finds sections of interests then follows links to other paragraphs and sections""""" (narrow down interests; dynamic, hop around)
- look for key words in exec summ, complete exec summ, then go into hypertext to look for information
- being interactive, able to look up acronyms
- for large documents, it's difficult to physically read all info, can find out how many instances of particular subject, helps track consistency
- wants to follow a thread, connected series of topics, helpful in reference"
- branch into other areas to search"(maybe raises a question, then pursue)
- see it as an interim step, better than just reading
- increases immediate accessibility of information
- more depth of information
- allows you to understand bridges and connections, not just to see that they exist

d. Miscellaneous (hypertext)

- should be augmented with multitile windows
- critical how it's done
- if done poorly, his 4 will drop to a 0
- wants ability to mark up a document
- executive summary on screen okay
- distribution of report over WWW might be easier
- important that the links to information are context-sensitive""(sometimes what reader has in mind for link is different than what author had)
- need to find information quickly otherwise would leave
- more likely to look into detail with hypertext than page by page
- incredible time saver"
- regarding hypertext, has sometimes seen too much on first few screens
- hypertext not confusing because browsers keep track of history
- effective technique
- hasn't used, couldn't give specific thoughts
- context issue--would want ability to toggle between getting more general information about link or more specific info
- want ability to merge and tailor

20. CD-ROM

First, do you already have a CD-ROM reader installed on your office computer?

- not on own office computer but has access = 10
- yes = 12
- no = 3

a. Would the cost of purchasing a CD-ROM reader to review Wright Lab reports be prohibitive?

- no, all going to move toward having CD-ROM readers anyway""""""""""""""(just needs to convince funding people that CD readers are worth buying; would welcome WL putting them on CD just to have a compelling reason; not sure but wouldn't think so)
- yes, envision resource conflict with having to pass CD around for people to use
- not applicable, would just use one he has access to

b. Would you want a paper copy of the text in addition to the CD?

- no
- doubt would want, unless to mark on
- wants ability to print portions""""""""""""""""""""""""""""""""""(important; for example, if only needs particular page or graph; standalone sections)
- initially yes, but not after training
- one or the other: if text only, then only wants paper; if with multimedia, then disk
- difficult to give up paper plus lower level organizations may need on paper
- yes because of eye strain

c. Could you install a CD yourself?

- yes = 24
- no

d. Miscellaneous(CD)

- can get more info on piece of paper than on computer screen
- see comments
- should make CDs self-installing""
- quick searches
- likes on CD when properly laid out for quick searches
- strains eye to read stuff on screen--a couple pages are okay but otherwise it gives him a headache
- wants print ability because on screen is harder to read

- don't have ability to flip back and forth to see formulas which he might need to reference
- likes idea of having several executive summaries on a CD to scan--then be able to look at tables of contents and/or index
- low tech approach can be best
- concern with useless multimedia
- can be time-consuming to load CD and go through hypertext
- best aspect: storage space
- would want ability to print to a variety of printer
- convenience
- good to quickly reach what you want
- easier to carry
- advantage to search whole disk
- can get 6 months to 1 yea worth of documents, access large amounts of data on one disk
- compares to microfiche, thinks CD will be more successful because of availability of PCs
- would have to have laptop, to be able to access info without a computer around

WWW comments:

- no preference between getting info off web or CD"
- web might be more cost-effective than CD
- currently web would be easier access but it would be CD down the line
- biggest difference is speed of access (with pentium, CD is 2-3x faster)""
- web's good for low-volume information
- prefer access CD: better to have right there, plug in and not worrying about nodes going down"""(only has web access now, but recognizes inconvenience of nodes going down; CD faster)
- CD has better element of control compared to building firewalls
- compared to Web, DTIC's report generator for use with its CDs is not user friendly
- web info might be more current than CD, especially if CDs only come out every 3-6 months""(timeliness issue)
- would use web for a broad brush search for information
- uses 2x week, more useful, tracking data, downloads software
- security issue
- prefer getting information over Internet than CD

OVERALL ASSESSMENT

a. Would you prefer one aspect of multimedia over another?

- video, CD-ROM, no sound
- video, hypertext, CD

- hypertext, video (animation, charts), audio if reading at same time*(easiest progression, video and sound take more tools and power to produce)""(would wonder how often sound would apply)
- video (exec summary for comprehension)"(only use sound if relate d to research)
- video and sound for display concepts"
- hypertext most useful especially for big document""""""""""""""""" (easiest; average PVI document will benefit from animation, video and hypertext, then possibly sound; can do hypertext easily
- video(best asset to help in understanding)"
- combine whatever works best--video, or text with sound

b. Would you want all or none, or a specific combination? Explain.

- CD, video, hypertext, sound as added bonus"""(not sound)
- can read a lot faster but if adding understanding, then worth effort, watching narration of video would be useful
- hypertext(easiest with greatest benefit), video, sound towards bottom
- ideally all""""""""""(3-D is better; would enhance because lots of PVI info is touchy-feely; more the better)
- subject specific--visualization is great/critical for sensory nature information

c. What is your opinion of the overall usefulness of the aspects of multimedia we've discussed?

- anything that helps you concentrate is good
- very powerful in explaining, boring reading texts and graphs, lots on CD
- very valuable as long as its economical; not spending energy and dollars vice doing job to get there"""
- consider cost factor and added benefit"""""(if cost 10% more, okay; 50-80, no way)
- want to get out more quickly
- has used multimedia on home products
- web site would be extremely useful
- definitely helps with storage problems, not sure about understanding
- for receiver, multimedia is great
- more and more effective
- better understanding""(comprehe nsion and efficiency context)
- will help contractor keep up better
- merely recreating paper text wouldn't be a good use of multimedia
- there's a place for multimedia as long as the information is easily dealt with in multimedia
- excellent idea, better than paper for getting info out
- for technical world and global society, there's no other way to go. Other nations and companies will take advantage of technology we need to be at technical edge; living in information age moving to communication age

- conveys information more quickly, tailor what you're getting out of info
- very useful"(ability to pull out 40 separate areas of interest in one hour)
- might color judgment, can get along okay with what he has now
- time saving--to go from what pilot said to actual software code--consistency""(if saves 10%)
- gives it a 4, would give a 5 if not for cost factor, but hardware is coming around
- if done right, could encourage reader to go into report
- doesn't think the world is panting for it, but once we have it, we'll wonder how we lived without it
- lots of promise, not yet being used right, be critical, not just because it's flashy
- gap exists between what we expect and what we get
- great potential, particularly hyperlinks"
- want portable capability, to use CD at home

Appendix C: Raw Data

The responses are recorded by individual, not in any particular order. The question numbers correspond to the interview form in Appendix A.

Response 1

2. Organization: Miami Valley Research Institute

3. Job Title: President

4. Reader category: Primary

5. Why do you read the WL/FIGP-1 reports? Order to stay technically current; not remain in vacuum

6. What specific information do you expect from the reports? Research trends, types, by whom, interests of the Air Force, technology applicable to my other areas

7. Basic Responsibilities in Job: Bridge the gap, find research opportunities, between WP and universities,

8. How many people do you supervise? 2-7

9. What kinds of jobs do they hold? admin, research

10. How often do you receive reports relevant to your field? 2 per month

11. How many are from Wright Laboratory? 1 per month

12. How much time do you spend reading the executive summary? couple of hours, total time, executive summary is primary source of information

13. How many of your decisions are based directly on the reports? (importance? percentage?)

14. Age: 54

15. Years in field: 31

16. Education: Ph.D. Mathematics

17. Sound: 1

a. In your experience, do you learn faster by reading and hearing? passive vs interactive

b. Do you retain information better?

c. Would the sound possibly be distracting? Yes

d. Would you be more inclined to review report?

Comments: Useful to pop in cassette, doesn't like sound when reading

18. Video: 5

a. Have you read without understanding exactly how something works and wished you had a dynamic presentation?
Wants to see information

b. Would a visual representation reduce the amount of time you need to understand material? Yes, helps understand

c. Is seeing something on video more likely to persuade you or cause you to react favorably to the material? Positive and persuasive

19. Hypertext: 4 (if it's done well)

a. Do you refer to the report index often (going to other parts of the document to look things up)? No

b. Do you pick out specific information or read the executive summary "cover to cover"?

c. If you've used hypertext, have you ever found it to be confusing or have you had difficulty navigating through a document? Biggest problem is after two or three links, then can get totally lost

d. How would hypertext facilitate or improve your ability to use the document effectively? Keep well organized, helps with organizational scheme

Comments: Critical how it's done; if done poorly, rating drops to zero

20. CD-ROM: 4
Already has CD-ROM reader on office computer: Yes

a. Would the cost of purchasing a CD-ROM reader to review Wright Lab reports be prohibitive? N/A

b. Would you want a paper copy of the text in addition to the CD?

c. Could you install a CD yourself? Yes

Comments: Could cut down on stacks of paper; make CDs self-installing

21. Overall Assessment

a. Would you prefer one aspect of multimedia over another? Video, CD-ROM, no sound

b. Would you want all or none, or a specific combination?

c. What is your opinion of the overall usefulness of the aspects of multimedia we've discussed? Very powerful in explaining boring texts and graphs, can put a lot of information on CD

Response 2

2. Organization: Ogden LAI Government Systems

3. Job Title: Senior Engineer

4. Reader category: Primary

5. Why do you read the WL/FIGP-1 reports? Stay up on state of the art. Reports represent months old information, can be references but white papers are a better source.

6. What specific information do you expect from the reports? Results, suggested courses of action, recommended follow-up activity, highlights of other areas that need future investigation, future programs

7. Basic Responsibilities in Job: Consult for Wright labs, help in making programmatic decisions, avionics

8. How many people do you supervise? 2

9. What kinds of jobs do they hold? Engineering

10. How often do you receive reports relevant to your field? Once a month

11. How many are from Wright Laboratory? WL--almost all (symposiums, conferences more current reports are follow-up to contractual, action after the fact, more of a documentation process, $$ better spent on research--can be critical, record keeping)

12. How much time do you spend reading the executive summary? 5-10 minutes if well-written, most critical part, mgmt level only part needed

13. How many of your decisions are based directly on the reports? (importance? percentage?) % low, more of creating knowledge bank to make decisions with

14. Age: 48

15. Years in field: 26

16. Education: M.S. Electrical Engineering

17. Sound: 4 (To describe when a boost pump fails--what it sounds like, then useful)

a. In your experience, do you learn faster by reading and hearing? passive vs interactive?

b. Do you retain information better?

c. Would the sound possibly be distracting?

d. Would you be more inclined to review report?

Comments: Read faster than someone speak--need added value--in car while driving; faster depends on what you're learning; engineers have slow reading rates--lot of understanding required; explanations when orders of abstraction involved is valuable to explain; trying to explain why a formula represents an event--physics represents 1st order; EE, astro 2nd level; listening, may get inflections, on words

18. Video: 5

a. Have you read without understanding exactly how something works and wished you had a dynamic presentation?

b. Would a visual representation reduce the amount of time you need to understand material? Aid in understanding

c. Is seeing something on video more likely to persuade you or cause you to react favorably to the material? Not persuaded one way or another
Comments: More sensory inputs the better you'll understand something, typically reduce amount time, concerned with quality itself of picture

19. Hypertext: 5

a. Do you refer to the report index often (going to other parts of the document to look things up)?

b. Do you pick out specific information or read the executive summary "cover to cover"? Reads cover to cover

c. If you've used hypertext, have you ever found it to be confusing or have you had difficulty navigating through a document?

d. How would hypertext facilitate or improve your ability to use the document effectively? When I have to support something, looking pieces to support gaps in knowledge

20. CD-ROM: 3

Already has CD-ROM reader on office computer: Yes

a. Would the cost of purchasing a CD-ROM reader to review Wright Lab reports be prohibitive?

b. Would you want a paper copy of the text in addition to the CD? No

c. Could you install a CD yourself? Yes

Comments: Likes material on CD-ROM. If properly laid out, can make quick searches

21. Overall Assessment

a. Would you prefer one aspect of multimedia over another? Video, hypertext, then CD-ROM

b. Would you want all or none, or a specific combination? CD-ROM, video, hypertext, sound as added bonus, read a lot faster but if adding understanding worth effort, watching narration of video would be useful

c. What is your opinion of the overall usefulness of the aspects of multimedia we've discussed? Very valuable, as long as economical, not spending energy and dollars vice

doing job to get there, if you spend $20,000 to do report--then $40,000 to do report; need constraints if cost factor is = or determine if you have added benefit

Response 3

2. Organization: WL/XPR

3. Job Title: Aerospace engineer

4. Reader category: Primary

5. Why do you read the WL/FIGP-1 reports?

6. What specific information do you expect from the reports? Techniques and tools, lessons learned to bring back to laboratory

7. Basic Responsibilities in Job: Staff engineer XP, WL for quality programs at large

8. How many people do you supervise? 0

9. What kinds of jobs do they hold?

10. How often do you receive reports relevant to your field? 8/month

11. How many are from Wright Laboratory? 50%

12. How much time do you spend reading the executive summary? 45

13. How many of your decisions are based directly on the reports? (importance? percentage?) None--contributing information

14. Age: 48

15. Years in field: 22

16. Education: B.S. Math, M.S. Math , M.S. Aero Engineering

17. Sound: 2

a. In your experience, do you learn faster by reading and hearing? passive vs interactive? Learn faster by reading and hearing

b. Do you retain information better? Retain better by hearing

c. Would the sound possibly be distracting? Not distracting if sound were commentary, but possibly--music with words, would be distracting

d. Would you be more inclined to review report? Sure

Comments: Likes books on tape; love to follow text directly

18. Video: 4

a. Have you read without understanding exactly how something works and wished you had a dynamic presentation?
All the time, design and experiments visual constructs, right brain constructs

b. Would a visual representation reduce the amount of time you need to understand material? Yes

c. Is seeing something on video more likely to persuade you or cause you to react favorably to the material? Yes, need to see

19. Hypertext: 5

a. Do you refer to the report index often (going to other parts of the document to look things up)? Refer to index often, need a general road map

b. Do you pick out specific information or read the executive summary "cover to cover"? Read cover to cover

c. If you've used hypertext, have you ever found it to be confusing or have you had difficulty navigating through a document? Hypertext is fine, it's just the machine

d. How would hypertext facilitate or improve your ability to use the document effectively? Save me from flipping back and forth--can home in--side trail rabbit chase, needed to satisfy before moving on

20. CD-ROM: 5

Already has CD-ROM reader on office computer: Yes

a. Would the cost of purchasing a CD-ROM reader to review Wright Lab reports be prohibitive?

b. Would you want a paper copy of the text in addition to the CD? Doubt would want paper copy, unless to mark on, want ability to print portions to mark or for diagrams, want to be able to incorporate

c. Could you install a CD yourself? Yes

21. Overall Assessment

a. Would you prefer one aspect of multimedia over another? Hypertext, video even idea of animation and charts, audio if reading at same time

b. Would you want all or none, or a specific combination?

c. What is your opinion of the overall usefulness of the aspects of multimedia we've discussed? Great, I like on the home products, used MS Bookshelf, has sounds of jet engine, used hypertext on Collier's encyclopedia

Response 4

2. Organization: Barron Associates Inc.

3. Job Title: Senior Research Scientist

4. Reader category: Nominal

5. Why do you read the WL/FIGP-1 reports? From WL related to contract or something related to work

6. What specific information do you expect from the reports? Technical approach to solving a problem, using usually same problem

7. Basic Responsibilities in Job: Control systems engineer, algorithm developer

8. How many people do you supervise? 4

9. What kinds of jobs do they hold? Software developers, engineers

10. How often do you receive reports relevant to your field? 1 per month

11. How many are from Wright Laboratory? 3/year

12. How much time do you spend reading the executive summary? 10 minutes, scanning it, to see if worth wading in deeper, not ever the only information

13. How many of your decisions are based directly on the reports? (importance? percentage?) Less than 10 % or thereabouts, usually different approach, comparing approach
14. Age: 33

15. Years in field: 11

16. Education: B.S. and M.S. Electrical Engineering

17. Sound: 1 (would want to have as part of video)

a. In your experience, do you learn faster by reading and hearing? passive vs interactive? Faster by reading only

b. Do you retain information better? Actually visually oriented

c. Would the sound possibly be distracting? Yes, would turn off, would be distracting to coworkers

d. Would you be more inclined to review report? No

18. Video: 4 (or 5)

a. Have you read without understanding exactly how something works and wished you had a dynamic presentation?
Depends on nature of work, frequently experiment or flight test, simulation, time dimension

b. Would a visual representation reduce the amount of time you need to understand material? Visuals would help understand results, interested in math part

c. Is seeing something on video more likely to persuade you or cause you to react favorably to the material? No

19. Hypertext: 3 (for single report; if linked to other reports, then rate as 4)

a. Do you refer to the report index often (going to other parts of the document to look things up)? Refer to index to find information

b. Do you pick out specific information or read the executive summary "cover to cover"? Read between skimming and cover to cover, read introduction then turn to table of contents

c. If you've used hypertext, have you ever found it to be confusing or have you had difficulty navigating through a document?

d. How would hypertext facilitate or improve your ability to use the document effectively?

Comments: Low-tech guy, print out hypertext, ability to mark up to help understand, exec summary on screen okay; distribution of report over web might be easier; used hypertext reference manuals/ WWW

20. CD-ROM: 4

Already has CD-ROM reader on office computer: Yes

a. Would the cost of purchasing a CD-ROM reader to review Wright Lab reports be prohibitive?

b. Would you want a paper copy of the text in addition to the CD? Print out sections most important, strains eye to read on screen, couple pages okay, gives a headache can't flip back to see formulas, need to be able to reference report text

c. Could you install a CD yourself? Yes

Comments: no preference getting info off web and CD; web might be more cost-effective; exec summary on CD okay, can scan several, then need ability to see rest of tables of contents; low-tech approach can be best; useless multimedia, can be time-consuming to load CD and go through hypertext, if can scan 20 reports then good

Another aspect--storage space; need to print a good copy from printer same way as if we printed, print to variety of printers; web site extremely useful

21. Overall Assessment

a. Would you prefer one aspect of multimedia over another?

b. Would you want all or none, or a specific combination?

c. What is your opinion of the overall usefulness of the aspects of multimedia we've discussed? Help storage problems, as far as understanding not sure

Response 5

2. Organization: Georgia Tech Research Institute

3. Job Title: Principal research engineer/head of emitter identification branch

4. Reader category: Primary

5. Why do you read the WL/FIGP-1 reports? Report might have to do with how they'll conduct report, use AFIT thesis, results affected how we chose to do research

6. What specific information do you expect from the reports? Technical results

7. Basic Responsibilities in Job: Manage group of engineers and students, signal processing, statistical analysis

8. How many people do you supervise? 5 professionals, students 1-11

9. What kinds of jobs do they hold? Senior engineer, research engineers with different levels of experience

10. How often do you receive reports relevant to your field? Varies with project, comes in a bunch at beginning of effort, and then whenever they're produced might be every 6 months

11. How many are from Wright Laboratory? 80-90%

12. How much time do you spend reading the executive summary? First thing I read, skim then decide whether to read rest

13. How many of your decisions are based directly on the reports? (importance? percentage?) Over 5 yrs, 50%; earlier times less, it varies

14. Age: 56

15. Years in field: 19

16. Education: M.S. Applied Mathematics, Applied Statistics

17. Sound: 4

a. In your experience, do you learn faster by reading and hearing? passive vs interactive? Don't know

b. Do you retain information better? Hearing would retain better, but not simultaneously

c. Would the sound possibly be distracting? Could be annoying, distracting one or the other would be fine

d. Would you be more inclined to review report? Probably would listen to text
Comments: not useful

18. Video: 5

a. Have you read without understanding exactly how something works and wished you had a dynamic presentation? Yes, tech reports

b. Would a visual representation reduce the amount of time you need to understand material? Probably

c. Is seeing something on video more likely to persuade you or cause you to react favorably to the material? Probably depend on quality of visual, not confusing well-done can be very persuasive

19. Hypertext: 5

a. Do you refer to the report index often (going to other parts of the document to look things up)? in report, subject index and table of contents

b. Do you pick out specific information or read the executive summary "cover to cover"? skim form t o back then go to table of contents to find exactly what information, want to know details

c. If you've used hypertext, have you ever found it to be confusing or have you had difficulty navigating through a document? Used a little

d. How would hypertext facilitate or improve your ability to use the document effectively? Look for specific results then being able to link to more specific information for more description, referencing two different kinds of works, comparing, would probably look for more info

20. CD-ROM: 5

Already has CD-ROM reader on office computer: No, access to

a. Would the cost of purchasing a CD-ROM reader to review Wright Lab reports be prohibitive? All going to move eventually

b. Would you want a paper copy of the text in addition to the CD? Initially yes, after training, want to print portions

c. Could you install a CD yourself? No

Comments: Good for storage, tons of paper can't send back; CD vice easy access to WEB page: currently would choose WEB, down the line CD

21. Overall Assessment

a. Would you prefer one aspect of multimedia over another? Video in exec summ for comprehension

b. Would you want all or none, or a specific combination? Hypertext (easiest with greatest benefit), then video, sound towards bottom

c. What is your opinion of the overall usefulness of the aspects of multimedia we've discussed? Could be very useful; will have to get used to it; consider feasibility for tech report writers budget and trouble, but for receiver, multimedia is great

Response 6

2. Organization: McDonnell Douglas

3. Job Title: Member Technical Staff, Advanced Avionics

4. Reader category: Primary

5. Why do you read the WL/FIGP-1 reports?

6. What specific information do you expect from the reports? For report produced by RPA or government, field manual, take all info and make available to next guy

7. Basic Responsibilities in Job: Describe engineering process for a project, make a collection of tech info is produced on program for posterity

8. How many people do you supervise? 0

9. What kinds of jobs do they hold?

10. How often do you receive reports relevant to your field? 2/month

11. How many are from Wright Laboratory? 0

12. How much time do you spend reading the executive summary? 30 minutes to read it thoroughly

13. How many of your decisions are based directly on the reports? (importance? percentage?) 20%, also contributing information
14. Age: 53

15. Years in field: 30

16. Education: B.S. Physics

17. Sound: 3

a. In your experience, do you learn faster by reading and hearing? passive vs interactive? Yes

b. Do you retain information better? Yes

c. Would the sound possibly be distracting? Yes, distracting my mind wants to think and voice keeps going, could keep going, disrupts concentration, interactive sound would help

d. Would you be more inclined to review report? Yes

18. Video: 4

a. Have you read without understanding exactly how something works and wished you had a dynamic presentation?
Yes, sometimes tabular information or to describe a relationship; if information is too technical can't draw a mental picture; would want to see how objects relate, can't get all on CD yet

b. Would a visual representation reduce the amount of time you need to understand material? Yes

c. Is seeing something on video more likely to persuade you or cause you to react favorably to the material? Absolutely, disclaimers tough to produce, usually good unless not telling truth

19. Hypertext: 4

a. Do you refer to the report index often (going to other parts of the document to look things up)? Uses table of contents and index

b. Do you pick out specific information or read the executive summary "cover to cover"?

c. If you've used hypertext, have you ever found it to be confusing or have you had difficulty navigating through a document? Yes, might get lost, not very often, enough to get you back, why is it talking about topic in his way in this information--context

d. How would hypertext facilitate or improve your ability to use the document effectively? Able to find information I'm interested in, right now lots of words, fast speed, how many times a subject occurs, where to continue for more information

Comments: To find what readers want, once there read everything, useful in navigating, depends on how, if you've read information, not as valuable, homing in is useful for some

20. CD-ROM: 4

Already has CD-ROM reader on office computer: Has access

a. Would the cost of purchasing a CD-ROM reader to review Wright Lab reports be prohibitive?

b. Would you want a paper copy of the text in addition to the CD? Not want paper, surf, but would print sections

c. Could you install a CD yourself? Yes

Comments: WEB site, speed of access biggest difference, with own pentium CD 2-3x as fast; low volume information on WEB

21. Overall Assessment

a. Would you prefer one aspect of multimedia over another? Take easiest progression--hypertext, audio and video are harder takes more tools and power, enough computer and disk to house/ one CD taxed w/o video

b. Would you want all or none, or a specific combination? They're all useful, hypertext cheap affordable, easy ideally all

c. What is your opinion of the overall usefulness of the aspects of multimedia we've discussed? Makes more and more effective, quicker understanding, help schooling, help systems, cheaper, in government legacy of paper, believe multimedia very effective, not have time to read; help contractor keep up better.
Has used world press/world view interleaf to create document on CD, search words and wordstream, haven't done audio or video

Response 7

2. Organization: Search Technology

3. Job Title: Director of Aviation Systems Division

4. Reader category: Primary (sometimes all three categories)

5. Why do you read the WL/FIGP-1 reports? Wright Laboratory is an important customer; want to find out what's going on, current state of the art

6. What specific information do you expect from the reports? Who's made what progress, in pilot decision aiding system, keeps in touch with other for example agencies, Europe, competition

7. Basic Responsibilities in Job: Technical and managerial, direction of organization, set goals for division, budget, strategic planning, resource usage, technical work

8. How many people do you supervise? 3

9. What kinds of jobs do they hold? Engineering and science

10. How often do you receive reports relevant to your field? 2-3/month

11. How many are from Wright Laboratory? 10 year, 30% most from NASA, universities

12. How much time do you spend reading the executive summary? Couple minutes, usually one-page summaries

13. How many of your decisions are based directly on the reports? (importance? percentage?) Goals established, extent of fit--10-20 %, how well does it fit in, contributing information

14. Age: 40

15. Years in field: 11

16. Education: B.S. Math, M.S. Computer Engineering

17. Sound: 1

a. In your experience, do you learn faster by reading and hearing? passive vs interactive? Yes

b. Do you retain information better? Yes

c. Would the sound possibly be distracting? Yes, possibly, just want text

d. Would you be more inclined to review report? Depends on sound, if reading superfluous, if demonstrating phenomena, noise levels it would very beneficial, use only where needed, want own pace, to scan, sequence/interactive good

Comments: would turn off, minimally useful unless could play over and over

18. Video: 5

a. Have you read without understanding exactly how something works and wished you had a dynamic presentation? Yes, Wright Lab reports specifically, many times

b. Would a visual representation reduce the amount of time you need to understand material? Yes, especially display formats, new concepts, picture 1000 words, maybe 10000 to convey, moving better than still, situation's evolving

c. Is seeing something on video more likely to persuade you or cause you to react favorably to the material? Depends, just content vice presentation format, if more accurate presentation

Comments: Have sound and video play together, here's a new concept, gets point across, captured sound and display of cockpit, reflects real world

19. Hypertext: 4

a. Do you refer to the report index often (going to other parts of the document to look things up)? Title, author, table of contents, read sections of interest

b. Do you pick out specific information or read the executive summary "cover to cover"? Read whole thing, unless not relevant, fooled by title

c. If you've used hypertext, have you ever found it to be confusing or have you had difficulty navigating through a document? Not confusing, straightforward, early implementations may have been less clear

d. How would hypertext facilitate or improve your ability to use the document effectively? Find sections of interests, follow links to other paragraphs and sections; ability to bounce back on key words that interest, rest of report might be superficial, home in on specific information

20. CD-ROM: 3

Already has CD-ROM reader on office computer: Has access

a. Would the cost of purchasing a CD-ROM reader to review Wright Lab reports be prohibitive? Yes prohibitive, shared convenience, rare, pass report and CD around, resource conflict

b. Would you want a paper copy of the text in addition to the CD? Want a paper copy, depends on report, if text is sufficient, then that's only way, with sound, etc., paper would be a waste--one or the other

c. Could you install a CD yourself?

Comments: Prefer access on CD vice WWW--might not matter, CD better have right there, plug in, no nodes down, convenience

21. Overall Assessment

a. Would you prefer one aspect of multimedia over another? For display concepts, choose sight and sound

b. Would you want all or none, or a specific combination?

c. What is your opinion of the overall usefulness of the aspects of multimedia we've discussed? Merely recreating paper text wouldn't be such a good use, place for it as long as information to be conveyed is easily dealt with in multimedia, demo disk with supporting text, why and how,

Response 8

2. Organization: Lockheed Martin

3. Job Title: Manager EW Systems

4. Reader category: Nominal

5. Why do you read the WL/FIGP-1 reports? Determine if there's a niche for L-M to respond to, request for something L-M can answer; 2) tie to some other program, filter for various programs compile and then disseminate again, knows who will be interested and could use information

6. What specific information do you expect from the reports? None, depends on subject, might want to look at exec summary and then to other areas of report--subject dependent

7. Basic Responsibilities in Job: requirements analysis, find develop market opportunities, participate in program management, support program managers at operating divisions

8. How many people do you supervise? 0

9. What kinds of jobs do they hold?

10. How often do you receive reports relevant to your field?
1/month; in office 1/wk

11. How many are from Wright Laboratory? 5-6 year from WL

12. How much time do you spend reading the executive summary? 20 minutes for about 3-4 pages

13. How many of your decisions are based directly on the reports? (importance? percentage?) 10-15%

14. Age: 49

15. Years in field: EW 27 (in industry, 7)

16. Education: B.S. Engineering Management, some graduate study

17. Sound: 2

a. In your experience, do you learn faster by reading and hearing? passive vs interactive? Learn faster by reading (I hear, I'm aware; I see, I remember; I do, I understand)

b. Do you retain information better? Retain better by seeing it (reading)

c. Would the sound possibly be distracting? No, neutral

d. Would you be more inclined to review report? At first for novelty, after that depends on subject, extra expense

Comments: 3-D audio; enough highlights to know whether to dig, to either listen or read, read quicker

18. Video: 4

a. Have you read without understanding exactly how something works and wished you had a dynamic presentation? Yes, technical cockpit information

b. Would a visual representation reduce the amount of time you need to understand material? Yes

c. Is seeing something on video more likely to persuade you or cause you to react favorably to the material? Yes, most likely, would allow to decide more quickly

Comments: Subject matter dependent: related to airplanes, makes airplane do better, visualization, picture 1000 words; to see helps; tough to say why a shade of red for example might be better to use powerful to show, sensory perception is hard to describe

19. Hypertext: 5

a. Do you refer to the report index often (going to other parts of the document to look things up)? Use table of contents to start, exec summary first, index

b. Do you pick out specific information or read the executive summary "cover to cover"? Page for page

c. If you've used hypertext, have you ever found it to be confusing or have you had difficulty navigating through a document? Has used hypertext; not confusing or difficult

d. How would hypertext facilitate or improve your ability to use the document effectively? Exec summary for mission reconfigurable cockpit world displays, flat panel, AMLDC, would look for key words first, even while reading exec summary; would complete exec summary and then go into hypertext to look for information, need to find quickly otherwise would leave

Comments: more likely to look into detail with hypertext than finding page to page; uses America On-Line pick out quickly

20. CD-ROM: 5

Already has CD-ROM reader on office computer: No

a. Would the cost of purchasing a CD-ROM reader to review Wright Lab reports be prohibitive? No, made other distributions would need CD, funding people don't have same concept eventually; the more CD the better for him to get; right now take home to use, not even access in office; as government grows in CD use; would like to see one dumping to network; not cost-prohibitive, need to convince of use; other divisions w/in L-M might have a couple of readers

b. Would you want a paper copy of the text in addition to the CD? If on CD, particular page or graph might be only thing, so would print out, would be handier as long as he could print, on screen is harder to read

c. Could you install a CD yourself? Yes

Comments: indifferent to CD or WWW, today prefer WEB because no CD reader, with WEB could still download; if nodes go down could be inconvenient; ease of access WEB; CD has better element control compared to building firewalls

21. Overall Assessment

a. Would you prefer one aspect of multimedia over another? Hypertext most useful no matter media for big document 100 pages or more

b. Would you want all or none, or a specific combination? Subject specific--visualization is great, critical for sensory nature information

c. What is your opinion of the overall usefulness of the aspects of multimedia we've discussed? Excellent idea better than paper for getting information out, to use paper is good, if comes on disk on WEB rather cut and paste than draw, more advantageous, import /export

Response 9

2. Organization: WL/XPR Investment Strategy Division

3. Job Title: Electronics engineer

4. Reader category: Primary

5. Why do you read the WL/FIGP-1 reports? Important to have technology ready to develop weapons systems, look at what WL has, other bases, at industry as well: aerospace industry 90%, look for gaps, and then share information, see if mutual interest to then put together research, with downsizing and budget cuts, can't depend on selves, same in industry; want to match interests to determine where best to put money
--general view of where company I s going, then disseminate and ask for feedback, and direct industry to get together with experts n lab
--DTIC distributes on CD, after industry provides 2x year, WL sends to AFMC; DTIC has tech plan which includes projects from that company: one may have 300 reports; keeps up what WL is doing by feedback, meeting with directorates--what tech focus on, what companies have you focused on

6. What specific information do you expect from the reports?

7. Basic Responsibilities in Job: Manager of IRD Independent Research and Development, look at 300 commercial work that pertains to weapons, provides linkage between WL and industry

8. How many people do you supervise? 0

9. What kinds of jobs do they hold?

10. How often do you receive reports relevant to your field? N/A (as mentioned above, gathers from many sources)

11. How many are from Wright Laboratory?

12. How much time do you spend reading the executive summary? skim to get flavor of project, tech plan indicates general idea then to introduction; with CD from DTIC, use search capability to narrow down subject areas

13. How many of your decisions are based directly on the reports? (importance? percentage?) N/A

14. Age: 44

15. Years in field: 21

16. Education: B.S. Electrical Engineering

17. Sound: 5

a. In your experience, do you learn faster by reading and hearing? passive vs interactive? Depends, say sound (hearing)

b. Do you retain information better? Sound helps retain

c. Would the sound possibly be distracting?

d. Would you be more inclined to review report? Yes, if you can make it more fun

Comments: People need to have sound blasters; has used story reading multimedia with daughter, wants to control sound

18. Video: 5+

a. Have you read without understanding exactly how something works and wished you had a dynamic presentation? Yes, not necessarily in exec summary but certainly in detailed portion

b. Would a visual representation reduce the amount of time you need to understand material? Yes

c. Is seeing something on video more likely to persuade you or cause you to react favorably to the material? No, gives you better understanding; picture worth a 1000 words to then draw better conclusion; if knowledgeable, can tell by picture if it'll work, words and picture must match, done right

19. Hypertext: 5

a. Do you refer to the report index often (going to other parts of the document to look things up)? Read background exec first; why doing, what is objective, if time permits go to project

b. Do you pick out specific information or read the executive summary "cover to cover"? Look for particular words

c. If you've used hypertext, have you ever found it to be confusing or have you had difficulty navigating through a document? In WWW, not difficult getting back; going forward don't always get what you want (see comments)

d. How would hypertext facilitate or improve your ability to use the document effectively? Start with key words relevant to technology, then see what relationship to other tech terms and click, follow tree to end (time permitting)

Comments: What you expect and what author had in mind is different; might enhance search capability because it gave more than originally, doesn't take that much more time--not waste of time--gets to meat much faster than otherwise

20. CD-ROM: 5

Already has CD-ROM reader on office computer: Yes

a. Would the cost of purchasing a CD-ROM reader to review Wright Lab reports be prohibitive?

b. Would you want a paper copy of the text in addition to the CD? No, don't need paper but would print portions

c. Could you install a CD yourself? Yes

Comments: Compared to WWW, CD DTIC has a report generator but needs training, not as user friendly as WWW, but they're working on that

21. Overall Assessment

a. Would you prefer one aspect of multimedia over another?
Hypertext, then look to motion sound

b. Would you want all or none, or a specific combination? 3-D is better

c. What is your opinion of the overall usefulness of the aspects of multimedia we've discussed? For technical world and global society, no other way to go, other nations and

companies will take advantage of technology we need to be at technical edge, living in information age/communication age, tech gives edge

Response 10

2. Organization: ASC/YFFC

3. Job Title: Escape System Integrated Product Team Lead

4. Reader category: Primary

5. Why do you read the WL/FIGP-1 reports? Stay abreast of emerging technologies

6. What specific information do you expect from the reports? Maturity of technologies

7. Basic Responsibilities in Job: design and develop F-22 escape system

8. How many people do you supervise? 15

9. What kinds of jobs do they hold? Engineers, safety, administrative, manufacturing, financial, contracting personnel

10. How often do you receive reports relevant to your field? 2-3 per year

11. How many are from Wright Laboratory? 1 per year

12. How much time do you spend reading the executive summary? 10 minutes

13. How many of your decisions are based directly on the reports? (importance? percentage?) Less than 10%

14. Age: 40

15. Years in field: 14

16. Education: B.S. Mechanical Engineering

17. Sound: 2

a. In your experience, do you learn faster by reading and hearing? passive vs interactive? Yes, by both

b. Do you retain information better? Yes

c. Would the sound possibly be distracting? Yes, could be distracting or slow you down

d. Would you be more inclined to review report? Initially yes, for novelty

Comments: Would to be able to control sound

18. Video: 5

a. Have you read without understanding exactly how something works and wished you had a dynamic presentation? Yes

b. Would a visual representation reduce the amount of time you need to understand material? Yes, display formats, interactions

c. Is seeing something on video more likely to persuade you or cause you to react favorably to the material? Yes

19. Hypertext: 5

a. Do you refer to the report index often (going to other parts of the document to look things up)? Yes

b. Do you pick out specific information or read the executive summary "cover to cover"? Pick out specific information

c. If you've used hypertext, have you ever found it to be confusing or have you had difficulty navigating through a document? Has found to be confusing and sometimes difficult to navigate in

d. How would hypertext facilitate or improve your ability to use the document effectively? Allow to narrow in areas of interest

20. CD-ROM: 4

Already has CD-ROM reader on office computer: Has access in office

a. Would the cost of purchasing a CD-ROM reader to review Wright Lab reports be prohibitive? No, eventually expect to have

b. Would you want a paper copy of the text in addition to the CD? Would want to print portions

c. Could you install a CD yourself? Yes

21. Overall Assessment

a. Would you prefer one aspect of multimedia over another? Video is best asset to help in understanding

b. Would you want all or none, or a specific combination? CD, video, hypertext, not necessarily sound

c. What is your opinion of the overall usefulness of the aspects of multimedia we've discussed? Rate it a %; conveys information more quickly, tailor what you're getting out of information, makes information easier to understand

Response 11

2. Organization: ASC/YFFC

3. Job Title: F-22 Pilot/Vehicle Interface Lead

4. Reader category: Nominal

5. Why do you read the WL/FIGP-1 reports? Find out what's going on in advanced research

6. What specific information do you expect from the reports? None

7. Basic Responsibilities in Job: Manage contractors' efforts in development and verification of pilot/vehicle interface design for F-22

8. How many people do you supervise? 0

9. What kinds of jobs do they hold?

10. How often do you receive reports relevant to your field? 2 per month

11. How many are from Wright Laboratory? 2-3 per year

12. How much time do you spend reading the executive summary? about 15 minutes

13. How many of your decisions are based directly on the reports? (importance? percentage?) Less than 10%, depends on phase of contract

14. Age: 33

15. Years in field: 10

16. Education: B.S. Psychology, M.A. Human Factors Psychology

17. Sound: 5

a. In your experience, do you learn faster by reading and hearing? passive vs interactive? Combination

b. Do you retain information better? Again, combination

c. Would the sound possibly be distracting? If playing while reading, for interactive would want control

d. Would you be more inclined to review report? Yes

18. Video: 5

a. Have you read without understanding exactly how something works and wished you had a dynamic presentation? Yes, would like to see video for changes while maneuvering

b. Would a visual representation reduce the amount of time you need to understand material? Yes

c. Is seeing something on video more likely to persuade you or cause you to react favorably to the material? Yes, unless done poorly

19. Hypertext: 5

a. Do you refer to the report index often (going to other parts of the document to look things up)? Yes

b. Do you pick out specific information or read the executive summary "cover to cover"? Pick specific information

c. If you've used hypertext, have you ever found it to be confusing or have you had difficulty navigating through a document? No

d. How would hypertext facilitate or improve your ability to use the document effectively? It's interactive, would use to look up meaning of acronyms, listen to sounds

20. CD-ROM: 5

Already has CD-ROM reader on office computer: Has access

a. Would the cost of purchasing a CD-ROM reader to review Wright Lab reports be prohibitive? No, there's group access, money; time accessing might be a problem

b. Would you want a paper copy of the text in addition to the CD? No

c. Could you install a CD yourself? Yes

Comments: Should make CDs self-installing

21. Overall Assessment

a. Would you prefer one aspect of multimedia over another? Hypertext is easiest

b. Would you want all or none, or a specific combination? CD and hypertext; sound and video would enhance--lot of pilot/vehicle interface stuff is touchy-feely

c. What is your opinion of the overall usefulness of the aspects of multimedia we've discussed? Very useful

Response 12

2. Organization: Electronic Commerce Resource Center (also employed by Embry Riddle Aeronautical University)

3. Job Title: Systems Analyst

4. Reader category: Secondary

5. Why do you read the WL/FIGP-1 reports? In support of Embry Riddle, for teaching, to keep current

6. What specific information do you expect from the reports? None

7. Basic Responsibilities in Job: Help promote electronic commerce to small and medium businesses that do business with federal government; as a faculty member, look at development of aircraft and spacecraft, teach operations management and operations research

8. How many people do you supervise? 0

9. What kinds of jobs do they hold?

10. How often do you receive reports relevant to your field? Average 1 every 2 months

11. How many are from Wright Laboratory? 15/16 over a year

12. How much time do you spend reading the executive summary? 2 minutes, don't study

13. How many of your decisions are based directly on the reports? (importance? percentage?) None, only inclusion in teaching, for development of air and spacecraft, advanced research and development, read reports for future use

14. Age: 63

15. Years in field: 25

16. Education: Engineering, MBA, Ph.D. Operations Research

17. Sound: 2

a. In your experience, do you learn faster by reading and hearing? passive vs interactive? By reading, likes quiet

b. Do you retain information better? By reading

c. Would the sound possibly be distracting? Could be

d. Would you be more inclined to review report?

18. Video: 4

a. Have you read without understanding exactly how something works and wished you had a dynamic presentation? Yes

b. Would a visual representation reduce the amount of time you need to understand material? Perhaps, depends on certain areas

c. Is seeing something on video more likely to persuade you or cause you to react favorably to the material? Yes

Comments: Depends on how it's done, if poorly, then not useful

19. Hypertext: 3

a. Do you refer to the report index often (going to other parts of the document to look things up)? Read straight through

b. Do you pick out specific information or read the executive summary "cover to cover"? Straight through

c. If you've used hypertext, have you ever found it to be confusing or have you had difficulty navigating through a document?

d. How would hypertext facilitate or improve your ability to use the document effectively?

20. CD-ROM: 3

Already has CD-ROM reader on office computer: Yes

a. Would the cost of purchasing a CD-ROM reader to review Wright Lab reports be prohibitive?

b. Would you want a paper copy of the text in addition to the CD? Would print portions

c. Could you install a CD yourself? Yes

Comments: Allow you to quickly reach what you want

21. Overall Assessment

a. Would you prefer one aspect of multimedia over another? Hypertext

b. Would you want all or none, or a specific combination?
In order, CD, hypertext, video and sound

c. What is your opinion of the overall usefulness of the aspects of multimedia we've discussed? Need to do cost/benefit analysis, multimedia would be helpful, but if costs too much--example, costs 10% more to produce, okay, 50-80%, not

Response 13

2. Organization: Aviation Applied Technology Directorate, U.S. Army Aviation Systems Command

3. Job Title: Aerospace Engineer, Rotocraft Pilot's Associate Program

4. Reader category: Primary

5. Why do you read the WL/FIGP-1 reports? Apply technology to Army

6. What specific information do you expect from the reports? Test results, limitations to research, basic assumptions, schedule and time line

7. Basic Responsibilities in Job: Assistant technical representative for contracting officer; review contractor progress and status

8. How many people do you supervise? 4

9. What kinds of jobs do they hold? Similar to own with narrower focus in specific technical areas

10. How often do you receive reports relevant to your field? 1 or 2 a month

11. How many are from Wright Laboratory? 25%

12. How much time do you spend reading the executive summary? 30 minutes or less

13. How many of your decisions are based directly on the reports? (importance? percentage?) 20% or less

14. Age: 33

15. Years in field: 11

16. Education: B.S. Aerospace and Ocean Engineering

17. Sound: 5

a. In your experience, do you learn faster by reading and hearing? passive vs interactive? Yes, both

b. Do you retain information better? Yes

c. Would the sound possibly be distracting? If out of context, inappropriate, with straight text probably not

d. Would you be more inclined to review report? Probably

18. Video: 5

a. Have you read without understanding exactly how something works and wished you had a dynamic presentation? Yes

b. Would a visual representation reduce the amount of time you need to understand material? Yes

c. Is seeing something on video more likely to persuade you or cause you to react favorably to the material? Yes, unfortunately, but bad video would detract

19. Hypertext: 5

a. Do you refer to the report index often (going to other parts of the document to look things up)? No, don't use index

b. Do you pick out specific information or read the executive summary "cover to cover"? Cover to cover

c. If you've used hypertext, have you ever found it to be confusing or have you had difficulty navigating through a document? No

d. How would hypertext facilitate or improve your ability to use the document effectively? For large documents, it's difficult to physically read the entire document. With hypertext, you can find out how many instances a certain subject occurs, helps track consistency, weed out information

Comments: Incredible time saver

20. CD-ROM: 5

Already has CD-ROM reader on office computer: Yes

a. Would the cost of purchasing a CD-ROM reader to review Wright Lab reports be prohibitive?

b. Would you want a paper copy of the text in addition to the CD? Still need paper (not ready to give up paper), because some lower organizations aren't technically ready, must be able to give portions of report on paper

c. Could you install a CD yourself? Yes

Comments: Easier to carry

21. Overall Assessment

a. Would you prefer one aspect of multimedia over another? Hypertext because of the linking capability

b. Would you want all or none, or a specific combination? All

c. What is your opinion of the overall usefulness of the aspects of multimedia we've discussed? Extremely useful; for example, in one hour, pulled out 40 separate areas of interest using hypertext; time saving--knowledge acquisition session from what pilot said to actual software code leads to consistency

Response 14

2. Organization: DSDC (DLA Systems Design Center) TMP

3. Job Title: Computer Specialist

4. Reader category: Secondary

5. Why do you read the WL/FIGP-1 reports? Stay current with latest information in field

6. What specific information do you expect from the reports? None

7. Basic Responsibilities in Job: Capacity planning, studies on computers necessary for support

8. How many people do you supervise? 0

9. What kinds of jobs do they hold?

10. How often do you receive reports relevant to your field? One a month

11. How many are from Wright Laboratory? One a year

12. How much time do you spend reading the executive summary? Just two minutes, skim

13. How many of your decisions are based directly on the reports? (importance? percentage?) Less than 10%

14. Age: 43

15. Years in field: 13

16. Education: Master's Library Science

17. Sound: 5

a. In your experience, do you learn faster by reading and hearing? passive vs interactive? Both, wants interactive

b. Do you retain information better? With both

c. Would the sound possibly be distracting? If it takes a long time to retrieve the file, then could break up flow of report

d. Would you be more inclined to review report? Wouldn't make a difference

Comments: Usefulness depends on how pertinent the sound is

18. Video: 1

a. Have you read without understanding exactly how something works and wished you had a dynamic presentation? Yes, could be helpful

b. Would a visual representation reduce the amount of time you need to understand material? Yes, for some subjects, graphs and trends of data

c. Is seeing something on video more likely to persuade you or cause you to react favorably to the material? No

Comments: Quality of current computer video is not that good, size of the video on screen is relevant, quality would have to be full screen, want clarity of image, now the resolution is too low

19. Hypertext: 5

a. Do you refer to the report index often (going to other parts of the document to look things up)? On WWW, yes, jump to links, use table of contents and index

b. Do you pick out specific information or read the executive summary "cover to cover"? Skim

c. If you've used hypertext, have you ever found it to be confusing or have you had difficulty navigating through a document? Not too confusing because browsers keep track of history; sometimes too much on first few screens

d. How would hypertext facilitate or improve your ability to use the document effectively?

20. CD-ROM: 5

Already has CD-ROM reader on office computer: No

a. Would the cost of purchasing a CD-ROM reader to review Wright Lab reports be prohibitive? Would probably just use another CD-ROM reader

b. Would you want a paper copy of the text in addition to the CD? Would want to print portions

c. Could you install a CD yourself? Yes

Comments: With CD, you can replay things, jump around, follow path you want rather than a predefined course; an advantage is being able to search electronically on whole disk

21. Overall Assessment

a. Would you prefer one aspect of multimedia over another?
Hypertext

b. Would you want all or none, or a specific combination?
CD and hypertext

c. What is your opinion of the overall usefulness of the aspects of multimedia we've discussed?

Response 15

2. Organization: ISX Corporation

3. Job Title: Program Manager

4. Reader category: Primary

5. Why do you read the WL/FIGP-1 reports? Understand goings on in particular technology, what Air Force needs are, marketing for Air Force community, what technical problems are being dealt with in WL

6. What specific information do you expect from the reports? None

7. Basic Responsibilities in Job: Lead groups of engineers, coordinate between software projects, ensure synergy between programs

8. How many people do you supervise? 12

9. What kinds of jobs do they hold? Software engineers

10. How often do you receive reports relevant to your field? Once a month

11. How many are from Wright Laboratory? Maybe two a year

12. How much time do you spend reading the executive summary? 5-10 minutes, scan to see if there's important information

13. How many of your decisions are based directly on the reports? (importance? percentage?) Only use as contributing information

14. Age: 45

15. Years in field: 12

16. Education: Master's Computer Software/English

17. Sound: 2 (or 2 1/2)

a. In your experience, do you learn faster by reading and hearing? passive vs interactive? No, like to skip around while reading, interactive sound is okay

b. Do you retain information better? N/A

c. Would the sound possibly be distracting? Might be

d. Would you be more inclined to review report? Initially, if effective, then yes

Comments: Useful if connected to something visual

18. Video: 3 (or 4)

a. Have you read without understanding exactly how something works and wished you had a dynamic presentation? Yes

b. Would a visual representation reduce the amount of time you need to understand material? Yes

c. Is seeing something on video more likely to persuade you or cause you to react favorably to the material? Yes

19. Hypertext: 3 (to 4)

a. Do you refer to the report index often (going to other parts of the document to look things up)? Skip around, skim rather than read

b. Do you pick out specific information or read the executive summary "cover to cover"? For executive summary, read cover to cover because usually short

c. If you've used hypertext, have you ever found it to be confusing or have you had difficulty navigating through a document? Can be confusing without history mechanism

d. How would hypertext facilitate or improve your ability to use the document effectively? Sometimes want to follow a thread--connected series of topics, only interested in particular topic then can pursue in text, hypertext helpful in reference

20. CD-ROM: 4

Already has CD-ROM reader on office computer: No

a. Would the cost of purchasing a CD-ROM reader to review Wright Lab reports be prohibitive? No

b. Would you want a paper copy of the text in addition to the CD? Would want to print portions, wants to get away from paper copies

c. Could you install a CD yourself? Yes

Comments: Easy to use and fast, tradeoff between CD and Web--CD faster, Web page maybe more current, figures a CD would be shipped only every 3-6 months, money issue

21. Overall Assessment

a. Would you prefer one aspect of multimedia over another? Combine, whatever works best together, like visual film clips connected to text, then with sound

b. Would you want all or none, or a specific combination?

c. What is your opinion of the overall usefulness of the aspects of multimedia we've discussed? Rate it a 4, maybe 5; costs associated, hardware portability, security, Web can be slow

Response 16

2. Organization: Greystone Technology Inc

3. Job Title: Vice President

4. Reader category: Primary

5. Why do you read the WL/FIGP-1 reports? Business development capacity, collaboration within government and industry, contributing marketing and research (ensure not placing dollars in redundant research), build teams to chase business
6. What specific information do you expect from the reports? Synthetic environments research, maturity of helmet-mounted displays, human factors studies in cockpit and training, specific research in application and maturity, real-time modeling and simulation, hardware capabilities--head tracker image generators

7. Basic Responsibilities in Job: Run overall--general manager of government systems business unit, accountable and responsible for profit and loss, search for new business technology

8. How many people do you supervise? 12

9. What kinds of jobs do they hold? Program management, business development, systems and software engineering

10. How often do you receive reports relevant to your field? 4-6 per month (with Internet surfing, 50 reports/month)

11. How many are from Wright Laboratory? 25% (out of the 50)

12. How much time do you spend reading the executive summary? 15 minutes (reads 100% of executive summary)

13. How many of your decisions are based directly on the reports? (importance? percentage?) For research in support of WL, 75%; as contributing information, it varies, 25-75%--application-specific

14. Age: 41

15. Years in field: 28 (18 military, 10 industry)

16. Education:

17. Sound: 2

a. In your experience, do you learn faster by reading and hearing? passive vs interactive? By reading

b. Do you retain information better? About same

c. Would the sound possibly be distracting? Yes, because tends to skim executive summary, doesn't want to be welded to sound component; wants control, potentially constrained, interactive sound would help

d. Would you be more inclined to review report? Slightly, want to use for information, content

18. Video: 3

a. Have you read without understanding exactly how something works and wished you had a dynamic presentation? Absolutely, information for synthetic environments, real-time simulation

b. Would a visual representation reduce the amount of time you need to understand material? Yes

c. Is seeing something on video more likely to persuade you or cause you to react favorably to the material? Yes, partly human nature, well-thought-out presentation strategy can digest video as well as text

19. Hypertext: 5

a. Do you refer to the report index often (going to other parts of the document to look things up)? On paper, use about 75% of time after reading executive summary. With hypertext, just go ahead and jump to information

b. Do you pick out specific information or read the executive summary "cover to cover"? Cover to cover, except on hypertext, then skip

c. If you've used hypertext, have you ever found it to be confusing or have you had difficulty navigating through a document? No

d. How would hypertext facilitate or improve your ability to use the document effectively? Quick way to navigate around, convenient, efficient, time-saving, branch into other searches, effective technique

20. CD-ROM: 4

Already has CD-ROM reader on office computer: Has access

a. Would the cost of purchasing a CD-ROM reader to review Wright Lab reports be prohibitive?

b. Would you want a paper copy of the text in addition to the CD? Would print portions

c. Could you install a CD yourself? Yes

Comments: For broadbrush search, uses Web

21. Overall Assessment

a. Would you prefer one aspect of multimedia over another? Hypertext

b. Would you want all or none, or a specific combination?

c. What is your opinion of the overall usefulness of the aspects of multimedia we've discussed? Very useful from comprehension and efficiency standpoint for any topic

Response 17

2. Organization: Multispectral Solutions

3. Job Title: Vice President, Advanced Programs

4. Reader category: Primary

5. Why do you read the WL/FIGP-1 reports? Stay abreast of new technology and new requirements

6. What specific information do you expect from the reports? Depends on subject, results, current breakthroughs, technology we can apply, involved in own areas of--technology assessment (to ensure we stay on top)

7. Basic Responsibilities in Job: Develop new electronic products

8. How many people do you supervise? 6

9. What kinds of jobs do they hold? Engineers, admin

10. How often do you receive reports relevant to your field? 2 per month

11. How many are from Wright Laboratory? less than two per year

12. How much time do you spend reading the executive summary? 5 minutes

13. How many of your decisions are based directly on the reports? (importance? percentage?) Less than 10%

14. Age: 40

15. Years in field: 12

16. Education: B.S. Engineering

17. Sound: 3

a. In your experience, do you learn faster by reading and hearing? passive vs interactive? Yes, both

b. Do you retain information better? Yes

c. Would the sound possibly be distracting? If not done properly, would detract, quality issue

d. Would you be more inclined to review report? Sure, if it's less boring

18. Video: 4

a. Have you read without understanding exactly how something works and wished you had a dynamic presentation? Yes, technical data

b. Would a visual representation reduce the amount of time you need to understand material? Absolutely

c. Is seeing something on video more likely to persuade you or cause you to react favorably to the material? Yes, there's an investment in cost and time, it would certainly stand out if done right

19. Hypertext: 2

a. Do you refer to the report index often (going to other parts of the document to look things up)? Only if report has several distinct areas, read front to back then pick particular area

b. Do you pick out specific information or read the executive summary "cover to cover"? Cover to cover

c. If you've used hypertext, have you ever found it to be confusing or have you had difficulty navigating through a document? On occasion

d. How would hypertext facilitate or improve your ability to use the document effectively? To me, an interim step, it's better than just reading

20. CD-ROM: 2

Already has CD-ROM reader on office computer: Yes

a. Would the cost of purchasing a CD-ROM reader to review Wright Lab reports be prohibitive?
b. Would you want a paper copy of the text in addition to the CD? Would print portions

c. Could you install a CD yourself? Yes

Comments: Couldn't get classified from Web; advantage to get six months to one year's worth of documents on single disk, ability to access multiple documents and/or large amounts of data on one disk. Uses Web about twice a week, more useful, logistics, tracking data, downloading software

21. Overall Assessment

a. Would you prefer one aspect of multimedia over another? Prefer video

b. Would you want all or none, or a specific combination? Sound and simple video, more that can be incorporated the better

c. What is your opinion of the overall usefulness of the aspects of multimedia we've discussed? For executive summary multimedia can save a lot of time; if done right, could encourage reader to delve into report; cost to do--what time and money's involved, a standard report would be good

Response 18

2. Organization: Barron Associates Inc

3. Job Title: President, Senior Research

4. Reader category: Primary
5. Why do you read the WL/FIGP-1 reports? See what technology's being worked on

6. What specific information do you expect from the reports? None, depends on if we're currently doing research in that area

7. Basic Responsibilities in Job: Program and business management

8. How many people do you supervise? 15

9. What kinds of jobs do they hold? Research and development

10. How often do you receive reports relevant to your field? 6 per year

11. How many are from Wright Laboratory? 50%

12. How much time do you spend reading the executive summary? Very little, (about 2 minutes), usually doesn't tell much
13. How many of your decisions are based directly on the reports? (importance? percentage?) Less than 10%

14. Age: 60

15. Years in field: 38

16. Education: B.S.C. Aeronautical Engineering, M.S. Aeronautical Instruments and Control

17. Sound: 1

a. In your experience, do you learn faster by reading and hearing? passive vs interactive? By reading

b. Do you retain information better? By reading

c. Would the sound possibly be distracting? Yes

d. Would you be more inclined to review report? Wouldn't make too much difference

18. Video: 3

a. Have you read without understanding exactly how something works and wished you had a dynamic presentation? Never really thought it was possible (for dynamic presentation); it would help in understanding writer's point

b. Would a visual representation reduce the amount of time you need to understand material? If miraculously could deal with obscure ideas, it could with a help button, if writer can anticipate readers' needs

c. Is seeing something on video more likely to persuade you or cause you to react favorably to the material? No, wouldn't have a bearing; material must be understood and then "good", wants essence of idea

19. Hypertext: 4 (has not personally used)

a. Do you refer to the report index often (going to other parts of the document to look things up)? Use index, table of contents, looks at references, might read those first

b. Do you pick out specific information or read the executive summary "cover to cover"? Not a lot

c. If you've used hypertext, have you ever found it to be confusing or have you had difficulty navigating through a document?

d. How would hypertext facilitate or improve your ability to use the document effectively? help feature for reader, could make statement about mathematical approach to make sense

20. CD-ROM: 2

Already has CD-ROM reader on office computer: Has access

a. Would the cost of purchasing a CD-ROM reader to review Wright Lab reports be prohibitive?

b. Would you want a paper copy of the text in addition to the CD? Wants paper; gets eyestrain looking at computer screens, can't write comments or highlight on screens

c. Could you install a CD yourself? Yes

Comments: Can be compared to microfiche as a means of storing information; thinks CD will do better than microfiche because of the availability of personal computers; would want to be able to take CD home (would need CD-ROM reader at home, then)

21. Overall Assessment

a. Would you prefer one aspect of multimedia over another? Hypertext--more useful than sound or video for science and math

b. Would you want all or none, or a specific combination?

c. What is your opinion of the overall usefulness of the aspects of multimedia we've discussed? World isn't panting for it, but once it's invaded our environment, we'll wonder how we got along without it; CD vice paper--landfill

Response 19

2. Organization: Applied Systems Intelligence

3. Job Title: Principal Scientist

4. Reader category: Primary (any of the three, secondary 10%)

5. Why do you read the WL/FIGP-1 reports? Technical content

6. What specific information do you expect from the reports? Describe man-in-the-loop experience, simulation, flight design experience

7. Basic Responsibilities in Job: Direct--finance and program manager, responsible overall for technical capabilities of company, manage projects

8. How many people do you supervise? 7

9. What kinds of jobs do they hold? Software development, team leadership of software

10. How often do you receive reports relevant to your field? Four per month

11. How many are from Wright Laboratory? Five per year

12. How much time do you spend reading the executive summary? 20 minutes to 1 hour; read whole summary, 5-10 pages

13. How many of your decisions are based directly on the reports? (importance? percentage?) Information usually affects indirectly; big storehouse of knowledge of perspective; cite reports, particular paragraphs; context

14. Age: 46

15. Years in field: 18

16. Education: B.A. Physics, M.S. Aero Engineering, Ph.D. Systems Engineering

17. Sound: 3 (for factual representation of information)

a. In your experience, do you learn faster by reading and hearing? passive vs interactive? Only one process in brain, to read and hear would be difficult, extra information from hearing would be emotional content

b. Do you retain information better? Some extra retention but not comprehension

c. Would the sound possibly be distracting? Maybe background music, discordant, wrong kinds of sounds

d. Would you be more inclined to review report? Depends, content addressability of not-text information; topic sentence--need way to address by content

18. Video: 5

a. Have you read without understanding exactly how something works and wished you had a dynamic presentation? Yes, animation is extremely powerful for depicting processes; idea of control over video--scroll bar using mouse to drag along, then temporal

b. Would a visual representation reduce the amount of time you need to understand material? Yes, static graphics better than none, dynamic better

c. Is seeing something on video more likely to persuade you or cause you to react favorably to the material? Would be skeptical of veracity, consider population: with management audience, doesn't need deep levels, techno-geek needs to know more so combine best of video technology

19. Hypertext: 5

a. Do you refer to the report index often (going to other parts of the document to look things up)? First time, read straight through then later use to build up--citations

b. Do you pick out specific information or read the executive summary "cover to cover"? Cover to cover

c. If you've used hypertext, have you ever found it to be confusing or have you had difficulty navigating through a document? Sometimes; don't know what terms mean, quality of hypertext indexing within different documents (general versus specific information--want ability to toggle between getting more general or more specific information. Instead usually get what authors think you want to know.)

d. How would hypertext facilitate or improve your ability to use the document effectively? As opposed to cross referencing, want increasing depth

20. CD-ROM: 5

Already has CD-ROM reader on office computer: Yes

a. Would the cost of purchasing a CD-ROM reader to review Wright Lab reports be prohibitive?

b. Would you want a paper copy of the text in addition to the CD? Would want to generate paper excerpts of CD

c. Could you install a CD yourself? Yes

Comments: CD versus Web, timeliness of Web, permanence of CD

21. Overall Assessment

a. Would you prefer one aspect of multimedia over another?

b. Would you want all or none, or a specific combination?

c. What is your opinion of the overall usefulness of the aspects of multimedia we've discussed? Lots of promise not necessarily being used right, need to be critical of it, just because it's flashy doesn't mean it's right/best; gap between what you expect and what you get

Response 20

2. Organization: Loral Federal Systems

3. Job Title: Systems Engineer, Program Manager

4. Reader category: Primary (sometimes secondary)

5. Why do you read the WL/FIGP-1 reports? To see if someone else has done research and development that might bear on current research

6. What specific information do you expect from the reports? Rarely get specific information, just get what other people's thoughts are--logical stream different than own--helps own creativity

7. Basic Responsibilities in Job: How to infuse new processor technology into B-2; make defensive avionics suite

8. How many people do you supervise? 0

9. What kinds of jobs do they hold?

10. How often do you receive reports relevant to your field? average 3 per month

11. How many are from Wright Laboratory? 1/2 to 1/3

12. How much time do you spend reading the executive summary? Varies, 10 to 20 minutes, chance won't read rest if not getting anything out of executive summary

13. How many of your decisions are based directly on the reports? (importance? percentage?) 15% but mostly read for background
14. Age: 49

15. Years in field: 26

16. Education: B.S. Electrical Engineering, M.S. Computer Systems

17. Sound: 5

a. In your experience, do you learn faster by reading and hearing? passive vs interactive? Haven't had much multimedia, learn by reading

b. Do you retain information better? Seeing and hearing

c. Would the sound possibly be distracting? If done wrong or sound for sound's sake, for example, text about bombing run and in the background is a running engine, can be cutesy but a distraction, would be good if it said, "When you tap on melon, it should sound like this," and then you hear sound

d. Would you be more inclined to review report? No, maybe initially for novelty

18. Video: 5

a. Have you read without understanding exactly how something works and wished you had a dynamic presentation? Yes, for maintenance concepts--for someone doing maintenance, it's one thing to read in text versus someone showing how--invaluable learning tool. Reports for Pilot Associate's Program, as engineer views system versus as user, show display with buttons, next page should have next buttons

b. Would a visual representation reduce the amount of time you need to understand material? Yes

c. Is seeing something on video more likely to persuade you or cause you to react favorably to the material? If done well and complements the material, ex. color makes things so vivid, even poor quality can elicit emotional response

19. Hypertext: 5

a. Do you refer to the report index often (going to other parts of the document to look things up)? Yes, go to index to start, then read

b. Do you pick out specific information or read the executive summary "cover to cover"? Cover to cover unless bad or irrelevant

c. If you've used hypertext, have you ever found it to be confusing or have you had difficulty navigating through a document? Getting lost is weakness of hypertext

d. How would hypertext facilitate or improve your ability to use the document effectively? Dynamite--hop around and link around

20. CD-ROM: 4

Already has CD-ROM reader on office computer: No

a. Would the cost of purchasing a CD-ROM reader to review Wright Lab reports be prohibitive? No

b. Would you want a paper copy of the text in addition to the CD? Wouldn't want paper if could print portions, needs a place to put notes

c. Could you install a CD yourself? yes

Comments: CD versus Web, would choose CD because of faster access, however you're limited to just what's on that CD whereas the Web has more quantity available and get real-time updates, might be able to find greater variety of items on Web

21. Overall Assessment

a. Would you prefer one aspect of multimedia over another? Hypertext

b. Would you want all or none, or a specific combination? Hypertext, video (enhance video), sound has potential but wonder how often it would apply

c. What is your opinion of the overall usefulness of the aspects of multimedia we've discussed? Great potential, particularly hyperlinks

Response 21

2. Organization: JJM Systems Inc

3. Job Title: Division Manager

4. Reader category: Primary

5. Why do you read the WL/FIGP-1 reports? Keep current, focus on being aware what's out there, what's new to make new products

6. What specific information do you expect from the reports? Results

7. Basic Responsibilities in Job: Program management, division management, program development and marketing, develop programs and customers, put together science and technology into new product = new research, CBD, develop ideas

8. How many people do you supervise? 2

9. What kinds of jobs do they hold? Program execution engineers

10. How often do you receive reports relevant to your field? Weekly, but not necessarily government technical documents

11. How many are from Wright Laboratory? None

12. How much time do you spend reading the executive summary? 5 - 10 minutes

13. How many of your decisions are based directly on the reports? (importance? percentage?) From technical reports received (not WL), 30%

14. Age: 32

15. Years in field: 9

16. Education: B.S. Psychology, M.S. Perception, Ph.D. Perception and Human Factors

17. Sound: 5 (for acoustics, speech recognition--1 or 2 if used in least effective way, not just for narration)

a. In your experience, do you learn faster by reading and hearing? passive vs interactive? In general, yes

b. Do you retain information better? Multimodal would do better

c. Would the sound possibly be distracting? When fatigued, need attend to other

d. Would you be more inclined to review report? Once past its novelty, if topic area were directly related to sound

Comments: Auditory warning displays would be more informative

18. Video: 5 (must be relevant to topic)

a. Have you read without understanding exactly how something works and wished you had a dynamic presentation? Yes, lab setups, wiring diagrams, methodology

b. Would a visual representation reduce the amount of time you need to understand material? Yes

c. Is seeing something on video more likely to persuade you or cause you to react favorably to the material? No, ability to convey information clearly and concisely is what's important

Comments: Video may change effectiveness of presenting information but that shouldn't change the data. Data will win although method of presentation may change utility

19. Hypertext: 5

a. Do you refer to the report index often (going to other parts of the document to look things up)? Jump around

b. Do you pick out specific information or read the executive summary "cover to cover"? Depends, browse, use to figure if something I want to read, then use index

c. If you've used hypertext, have you ever found it to be confusing or have you had difficulty navigating through a document? Sometimes, that's a function of who built document

d. How would hypertext facilitate or improve your ability to use the document effectively? Increases immediate accessibility of information, in technical documents, can to used to help link areas of research, provide supplemental information, expanded footnotes, literature review information; helps bring things in appendices forward

Comments: Should be augmented with multitile windows

20. CD-ROM: 2

Already has CD-ROM reader on office computer: Yes

a. Would the cost of purchasing a CD-ROM reader to review Wright Lab reports be prohibitive?

b. Would you want a paper copy of the text in addition to the CD? Want to be able to print portions

c. Could you install a CD yourself? Yes

Comments: Technology not ready to store on CD. Can't be indexed, search engines so that it relates topically to research; how do you get to specific literature--want to get to other but can't pick and choose; as storage and retrieval, too powerful for storing independent documents; need to consider size of tech report to be put on CD; advantage of manipulating file on own, but disadvantage, cut and paste could lead to plagiarism

21. Overall Assessment

a. Would you prefer one aspect of multimedia over another? Hypertext, but basically, do what's appropriate

b. Would you want all or none, or a specific combination?

c. What is your opinion of the overall usefulness of the aspects of multimedia we've discussed? If technologically feasible; important information to convey, average cockpit report will benefit from using animation and video and hypertext, those are most widely applicable, then sound

Response 22

2. Organization: Wittenberg University

3. Job Title: Professor of Mathematics and Computer Science

4. Reader category: Secondary for research, nominal for information

5. Why do you read the WL/FIGP-1 reports? Looking for information related to artificial intelligence and mathematical programs

6. What specific information do you expect from the reports? New things discovered, new results, neural network simulations--new methods, new expert system improvements, supporting information to help validate work done

7. Basic Responsibilities in Job: Teach, research specializes in artificial intelligence, math program, Chair of Personnel Board

8. How many people do you supervise? 0

9. What kinds of jobs do they hold?

10. How often do you receive reports relevant to your field? Six per year

11. How many are from Wright Laboratory? 1, very infrequently

12. How much time do you spend reading the executive summary? 20 minutes

13. How many of your decisions are based directly on the reports? (importance? percentage?) Less than 10%

14. Age: 55

15. Years in field: 31

16. Education: B.S. Mathematics and Physics, M.S. Applied Mathematics, Ph.D. Computer Science

17. Sound: 3

a. In your experience, do you learn faster by reading and hearing? passive vs interactive? Yes, interactive good

b. Do you retain information better? With both, seeing

c. Would the sound possibly be distracting? Could be if not done well

d. Would you be more inclined to review report? Might, novelty, then depends on success

Comments: Emphasize use of sound and video judiciously

18. Video: 5

a. Have you read without understanding exactly how something works and wished you had a dynamic presentation? Yes, in expert systems often doesn't give detail

b. Would a visual representation reduce the amount of time you need to understand material? Yes

c. Is seeing something on video more likely to persuade you or cause you to react favorably to the material? Yes, more information, color focuses you on what you need to look at, can see change and rate of change (for wind tunnel, physics, visuals will add tremendously)

19. Hypertext: 5+

a. Do you refer to the report index often (going to other parts of the document to look things up)? Skim chapters using Evelyn Wood method then focus on information

b. Do you pick out specific information or read the executive summary "cover to cover"? Front to back because it's not that long

c. If you've used hypertext, have you ever found it to be confusing or have you had difficulty navigating through a document? Not confusing, have "tree" mental view

d. How would hypertext facilitate or improve your ability to use the document effectively? Lets you pick out what you want to find until end, maybe raises a question to then pursue

Comments: Want ability to merge, to save and tailor, more potential for masses, capability of searches

20. CD-ROM: 5

Already has CD-ROM reader on office computer: Yes

a. Would the cost of purchasing a CD-ROM reader to review Wright Lab reports be prohibitive?

b. Would you want a paper copy of the text in addition to the CD? Want to print portions

c. Could you install a CD yourself? Yes

Comments: If text only, then only rate a 4, can carry places, if had a laptop; advantage of Web site, don't have to look for CD, but CD is quicker

21. Overall Assessment

a. Would you prefer one aspect of multimedia over another? Hypertext--can do easily

b. Would you want all or none, or a specific combination?

c. What is your opinion of the overall usefulness of the aspects of multimedia we've discussed? Lot of potential, wish to have laptop for portable capability, could use at home; stimulation of multimedia--potential of Netscape

Response 23

2. Organization: Booz-Allen and Hamilton Inc
3. Job Title: Consultant

4. Reader category: Secondary

5. Why do you read the WL/FIGP-1 reports? Pull information supporting SURVIAC use

6. What specific information do you expect from the reports? key word subject search

7. Basic Responsibilities in Job:

8. How many people do you supervise? 0

9. What kinds of jobs do they hold?

10. How often do you receive reports relevant to your field? O (go and look for information)

11. How many are from Wright Laboratory?

12. How much time do you spend reading the executive summary? 20 minutes

13. How many of your decisions are based directly on the reports? (importance? percentage?)

14. Age: 44

15. Years in field: 21

16. Education: B.S. Electrical Engineering, M.B.A.

17. Sound: 4

a. In your experience, do you learn faster by reading and hearing? passive vs interactive? If hear what I'm reading, concentrate better

b. Do you retain information better? Yes

c. Would the sound possibly be distracting? Not distracting, but words, things looked at differently could put off, sound affecting data

d. Would you be more inclined to review report? Yes, would want to see standardized format

Comments: Haven't really used anything like that yet
18. Video: 5

a. Have you read without understanding exactly how something works and wished you had a dynamic presentation? Always

b. Would a visual representation reduce the amount of time you need to understand material? Depends, if representation detailed enough, or higher level; whitewashing doesn't help, visuals should be as detailed as data

c. Is seeing something on video more likely to persuade you or cause you to react favorably to the material? Generally yes if good video--would be supplemental, can't watch and read at same time

19. Hypertext: 4

a. Do you refer to the report index often (going to other parts of the document to look things up)? Use index unless have to read through

b. Do you pick out specific information or read the executive summary "cover to cover"? Read whole

c. If you've used hypertext, have you ever found it to be confusing or have you had difficulty navigating through a document? Has used before

d. How would hypertext facilitate or improve your ability to use the document effectively? Double the capacity, data search in unformatted text, looking by using keyword, hard to find; want search tools that are context-sensitive, people who are building need to find out what readers want

20. CD-ROM: 4

Already has CD-ROM reader on office computer: Has access

a. Would the cost of purchasing a CD-ROM reader to review Wright Lab reports be prohibitive? Not up with what government uses, if you knew everyone were going to CD, not just WL, then not prohibitive

b. Would you want a paper copy of the text in addition to the CD? Want capability to print portions

c. Could you install a CD yourself? Yes

Comments: Prefer over Internet than CD because can pull from large information database

21. Overall Assessment

a. Would you prefer one aspect of multimedia over another? Sound and video

b. Would you want all or none, or a specific combination?

c. What is your opinion of the overall usefulness of the aspects of multimedia we've discussed? Anything that helps you concentrate is a good idea

Response 24

2. Organization: WL/XPI International Cooperative Programs Division

3. Job Title: International Program Manager

4. Reader category: Secondary

5. Why do you read the WL/FIGP-1 reports? Understand the mission/focus for a potential cooperative effort and utilize information in assisting and developing agreements

6. What specific information do you expect from the reports? Actual mission need, how we can find a solution

7. Basic Responsibilities in Job: Coordinate/facilitate international cooperative agreements, assist in writing or developing, find existing agreements within DoD to provide a legal vehicle to accomplish program; placement here and abroad of scientists and engineers in exchange programs

8. How many people do you supervise? 0

9. What kinds of jobs do they hold?

10. How often do you receive reports relevant to your field? Daily (tech trip reports, status reports)

11. How many are from Wright Laboratory? 98% Research result reports, 5-10 a year

12. How much time do you spend reading the executive summary? 30 minutes

13. How many of your decisions are based directly on the reports? (importance? percentage?) 25% other contributing information

14. Age: 50

15. Years in field: 8

16. Education: B.A. Liberal Arts

17. Sound: 1

a. In your experience, do you learn faster by reading and hearing? passive vs interactive? Just reading

b. Do you retain information better? Reading, ability to go back, own pace

c. Would the sound possibly be distracting? No

d. Would you be more inclined to review report? No

Comments: Not much experience, don't really see value, maybe rate 3 for narration

18. Video: 4

a. Have you read without understanding exactly how something works and wished you had a dynamic presentation? Probably

b. Would a visual representation reduce the amount of time you need to understand material? Depends on material, it could

c. Is seeing something on video more likely to persuade you or cause you to react favorably to the material? Perhaps, minimally

19. Hypertext: 5

a. Do you refer to the report index often (going to other parts of the document to look things up)? Yes

b. Do you pick out specific information or read the executive summary "cover to cover"? Depends on topic, if pressed for time, then scan otherwise, cover to cover

c. If you've used hypertext, have you ever found it to be confusing or have you had difficulty navigating through a document?

d. How would hypertext facilitate or improve your ability to use the document effectively? Value in finding thread, further understanding, lots of technical problems, can't be knowledgeable on all, further reference and explanation

20. CD-ROM: 4

Already has CD-ROM reader on office computer: No

a. Would the cost of purchasing a CD-ROM reader to review Wright Lab reports be prohibitive? Don't know, wouldn't think so, if end value outweighs cost, office keeps up with technology

b. Would you want a paper copy of the text in addition to the CD? Want to print portions

c. Could you install a CD yourself? Minimally

21. Overall Assessment

a. Would you prefer one aspect of multimedia over another? Hypertext

b. Would you want all or none, or a specific combination? Hypertext, CD, video option convenient

c. What is your opinion of the overall usefulness of the aspects of multimedia we've discussed? Very good value especially for people who aren't experts, for those who are, it's a faster method of getting information; cost effectiveness

Response 25

2. Organization: WL/FII Flight Dynamics Directorate

3. Job Title: Aerospace Engineer Integration Division Advanced Concepts

4. Reader category: Nominal

5. Why do you read the WL/FIGP-1 reports? Looking for ideas

6. What specific information do you expect from the reports? Maturity of technology, might interconnect with other technology, fit together to make stronger

7. Basic Responsibilities in Job: Run contracts, advanced integration planning

8. How many people do you supervise? 0

9. What kinds of jobs do they hold?

10. How often do you receive reports relevant to your field? 3-4 per month

11. How many are from Wright Laboratory? 50%

12. How much time do you spend reading the executive summary? 10 minutes

13. How many of your decisions are based directly on the reports? (importance? percentage?) Less than 10%

14. Age: 53

15. Years in field: 30

16. Education: B.S. Mechanical Engineering, post graduate study in Mechanical Engineering

17. Sound: 1

a. In your experience, do you learn faster by reading and hearing? passive vs interactive? Visual

b. Do you retain information better? Hear/read

c. Would the sound possibly be distracting? Depends on how used,

d. Would you be more inclined to review report? Novelty

Comments: Use for different warning signals, aural information if that's the subject of the report, voice recognition; could be used at end of section to reinforce main points on a viewgraph, then speaking okay vice scrolling and reading

18. Video: 5

a. Have you read without understanding exactly how something works and wished you had a dynamic presentation? Yes

b. Would a visual representation reduce the amount of time you need to understand material? Yes

c. Is seeing something on video more likely to persuade you or cause you to react favorably to the material? Not per se, reference commercials

19. Hypertext: 5

a. Do you refer to the report index often (going to other parts of the document to look things up)? Scan, read summary, then use table of contents and index, or look at pictures and captions then search for backup

b. Do you pick out specific information or read the executive summary "cover to cover"? Word for word, pick up nuances

c. If you've used hypertext, have you ever found it to be confusing or have you had difficulty navigating through a document?

d. How would hypertext facilitate or improve your ability to use the document effectively? Give backup information, links to understand other paragraphs, understand bridges and connections between ideas that author used, methodology

20. CD-ROM: 5

Already has CD-ROM reader on office computer: No

a. Would the cost of purchasing a CD-ROM reader to review Wright Lab reports be prohibitive? Depends, but doesn't think so

b. Would you want a paper copy of the text in addition to the CD? Depends, for standalone sections

c. Could you install a CD yourself? Yes

21. Overall Assessment

a. Would you prefer one aspect of multimedia over another? Video, 3-D planar rendition to move around and see behind things, only deal with sound if related to research

b. Would you want all or none, or a specific combination?

c. What is your opinion of the overall usefulness of the aspects of multimedia we've discussed? Rate 4, could delay putting out information, have TV glitz effect, cost factor--should make simple, good for information mining, high resolution television makes difference in people's understanding (positive)

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Vita

Captain Donna M. Grudziecki [redacted] She graduated from Miami Southridge Senior High School in 1983 and entered undergraduate studies at the University of Miami in Coral Gables, Florida. She graduated with a Bachelor of Science degree in Telecommunications and English in May 1987. She received her commission on 4 May 1989 upon completion of Officer Training School. Her first assignment was at Beale AFB CA as an adjutant. While at Beale AFB, she also served as a wing executive and wing protocol officer and as a squadron section commander. In May 1994, Capt Grudziecki entered the School of Logistics and Acquisition Management, Air Force Institute of Technology.

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